CHAPTER VII

DEMAND VARIATIONS

Groundnut started its career in Indian agriculture as an export crop. It was appropriate, therefore, that our study began with export variations. The export-induced acreage-production variations are studied in the chapter that followed. The subsequent chapter examined several issues related to agricultural productivity in general and, in particular, yield decline and yield instability of groundnut. Thus, the various factors which have affected the production and utilisation of groundnut and its products have been discussed in the previous chapters. In this chapter, we shall briefly recall the effects of these factors to obtain an integrated perspective of India's oils and fats economy. The technical and also the commercial feasibility of substituting one for another the oils and fats from the various sources have, quite naturally, made the oils and fats economy of India interdependent. The utilisation of groundnut, therefore, must be viewed in the context of the interchangeability of different oils and fats.

In this connection an attempt is made to examine such problems as the composition of groundnut exports and their changing pattern, the present position of the oilseed-crushing industry, the development of oil-using industries, the utilisation of groundnut cakes, etc. This chapter emphasizes that it is not correct to rule out any production process in favour of any other, as this is a matter of combination of various factors of production in varying ratios depending upon factor prices. Again, employment is a function of total national product and not necessarily of this or that.
technique. The slow growth of oil-using industries reflects a poor income-capital position. Various possibilities for augmenting the vegetable oil-resources are examined in this context.

I. SOURCES OF FAT SUPPLY

Fats originate from animal and vegetable sources. Fats of animal origin comprise two distinct sources: marine animals and domestic animals. Marine fats are derived from the bodies of fish, cod, shark, sardine, pilchard, whale, etc. Animal fats are generally derived from domesticated animals. They include milk and derivatives of milk as well as slaughter fats obtained from the bodies of domestic animals—lard, tallow and their equivalent, oleo-stock, oleo-stearine, oleo-oil, etc.

Vegetable fats are derived from annual and perennial plants. Out of the total world production of oils and fats totaling 30.6 million metric tons in 1959, animal fats constituted 12.9 million tons, i.e. 42.3 per cent, marine fats 934,000 tons, i.e. 3.1 per cent, and vegetable fats 16.7 million tons, i.e. 54.7 per cent; the relevant proportions in 1934-38 were, respectively, 40 per cent, 4 per cent and 56 per cent.

1 Proteins, fats and carbohydrates are the main building materials of all living organisms. Probably all plants and living organisms contain some fat. From the viewpoints of fat content the most interesting ones are those which contain enough fat to make its extraction economically advantageous. E.W. Ekey, Vegetable Oils and Oilseeds, 1954, pp. 1-4.

2 Human genius have also produced synthetic fats. Germans manufactured it in the last War from propylene, prepared from coal and then converted into glycerine. Even apart from the economies of enterprise, notwithstanding the pressure of necessity, Germans could produce even as much as 2,000 tons of edible fat a year, indeed a quite negligible proportion of German requirements. Vide U.N.O., F.A.O., Synthetic Fats: Their Potential Contribution to World Fat Requirements, 1949.

TABLE VII.1 furnishes the data regarding the estimated supply and disposition of fats, oils and oilseeds in India. Vegetable fats contribute 80 per cent of the total supplies of oils and fats. Among vegetable fats, the share of groundnuts was 56.5 per cent. Groundnuts contributed 957,000 tons of oil out of the total supplies of 2.2 million tons, its share being 44.5 per cent. Fats of animal origin comprised 20 per cent. They are exclusively milk fats, chiefly, ghee and butter. Their production amounted to 464,000 tons. The production of slaughter fats—lard, suet, etc.—is negligible, probably due to the religious prejudice of the Indian people. Even in non-edible and industrial uses, slaughter fats are less preferred, though India's bovine population is the largest in the world and claims one-quarter of the world total. Perhaps due to the same reason, in spite of the vast sea coast, marine fats do not play any significant role.

The Planning Commission has an ambitious programme for the development of fisheries and marine oils. The country being so poor in edible oils, there is an imperative need to tap marine fat resources. As emphasized throughout this chapter, the underdeveloped economy implies the existence of untapped resources. However, the adoption of modern technology for tapping, refining and hydrogenating these oils is largely governed by the income-capital position of the community and several other factors which grow with it. Capital, the scarcest factors of production, needs to be used with an eye to the overall objective of maximising the national product. Entrepreneurs, governed by factor-price and product-price considerations, are the best judges to decide which lines of production are comparatively more profitable. Special cases and situations apart, only these conditions ensure the natural growth of the economy through maximising output and incomes. As the economy grows, the untapped resources get harnessed taking
### TABLE VII.1

**FATS, OILS AND OILSEEDS: ESTIMATED SUPPLY AND DISPOSITION, 1958**

(Figures in thousand tons)

<table>
<thead>
<tr>
<th>Item</th>
<th>Oilseeds</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Oil</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Production</td>
<td>Imports</td>
<td>Used for seed</td>
<td>Edible and other non-edible uses</td>
<td>Exported</td>
<td>Crushed</td>
<td>Production</td>
<td>Imports</td>
<td>Exports</td>
<td>Edible use</td>
<td>Non-edible</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Ghee and butter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>464</td>
<td>-</td>
<td>-</td>
<td>464</td>
</tr>
<tr>
<td>(fat content)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>466.6</td>
<td>0.9</td>
<td>902.8(93.5)</td>
<td>63.9(6.5)</td>
</tr>
<tr>
<td>Groundnuts (unshelled)</td>
<td>4436</td>
<td>679</td>
<td>333</td>
<td>4</td>
<td>3420</td>
<td>806</td>
<td>265.8</td>
<td>265.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rape and mustard</td>
<td>923</td>
<td>17</td>
<td>100</td>
<td>+</td>
<td>269</td>
<td>(75.9)</td>
<td>102.2</td>
<td>0.3</td>
<td>81.9</td>
<td>20.0</td>
<td>-</td>
</tr>
<tr>
<td>Sesame</td>
<td>354</td>
<td>14</td>
<td>71</td>
<td>+</td>
<td>269</td>
<td>(75.9)</td>
<td>102.2</td>
<td>0.3</td>
<td>81.9</td>
<td>20.0</td>
<td>-</td>
</tr>
<tr>
<td>Linseed</td>
<td>249</td>
<td>29</td>
<td>17</td>
<td>+</td>
<td>203</td>
<td>(81.5)</td>
<td>69.0</td>
<td>22.2</td>
<td>31.8</td>
<td>15.0</td>
<td>-</td>
</tr>
<tr>
<td>Coconut (copra-basis)</td>
<td>632</td>
<td>100</td>
<td>11</td>
<td>400</td>
<td>-</td>
<td>321</td>
<td>(50.7)</td>
<td>197.4</td>
<td>4/7.3</td>
<td>-</td>
<td>101.1</td>
</tr>
<tr>
<td>Castor</td>
<td>89</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>86</td>
<td>(96.6)</td>
<td>33.7</td>
<td>20.2</td>
<td>-</td>
<td>-</td>
<td>13.5</td>
</tr>
<tr>
<td>Cotton</td>
<td>2225</td>
<td>135</td>
<td>1890</td>
<td>-</td>
<td>200</td>
<td>(8.9)</td>
<td>24.0</td>
<td>2.4</td>
<td>15.0</td>
<td>-</td>
<td>6.6</td>
</tr>
<tr>
<td>Other oilseeds</td>
<td>200</td>
<td>3</td>
<td>3</td>
<td>194</td>
<td>194</td>
<td>(97.0)</td>
<td>48.5</td>
<td>3/18.6</td>
<td>6.8</td>
<td>27.0</td>
<td>33.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2171.2</td>
<td>25.9</td>
<td>53.1</td>
<td>1889.1(88.1)</td>
<td>254.9(12%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

+ Less than 500 tons
3/ includes 18300 long tons of palm oil.
4/ Figures in bracket indicates percentages. Sources: *Fats and Oil Economy of India*, op. cit., Table 9.
their turn according to their relative price-cost structure. Any attempt to force advanced techniques or industrialisation would create bottlenecks at several points and, instead of promoting, might hinder the industrialisation process. The state at the most can profitably indicate the existence and magnitude of untapped resources through research and extension services. The mutual substitutability between marine oils and vegetable oils is primarily governed by their relative price-cost structure. As marine oils are considered to be the cheapest source of fats, their greater use for industrial purposes may probably reduce the pressures on edible vegetable oils in the domestic market, the latter being currently used for industrial purposes.

Out of the total production of visible oils and fats, the bulk of the production, nearly 88 per cent, is claimed by edible use and food processing industries and the remaining 12 per cent by industrial uses (TABLE VII.1). Industrial utilisation of fats largely stems from their lathering and drying properties. Of all the industries using fats as raw material, the soap industry and drying oil industries are large claimants. Among other industries using significant quantities of vegetable fats are fish canning, lubricants, candles, perfumery, cosmetics, ointments, textiles, leather and pharmaceuticals. Groundnut oil does not possess any natural advantage over other oils and fats used in these industries as raw materials. Hence it is primarily utilised as an edible oil. Industrial uses claimed only 6.5 per cent of the total production in 1958. Exports were negligible in that year. An attempt is made below to review critically the changing pattern of the utilisation of groundnut and its products.

1 Much of the consumption of fats and oils is invisible. Fat requirements are obtained from natural foodstuffs without having been separated from other plants and animal materials in which it occurs. Thus, butterfat consumed in the form of milk and other animal fats consumed in the form of meat are excluded from the production data. This invisible output and consumption leads to the underestimation of the production data of oils and fats.
Although the groundnut plant was introduced in India in the beginning of the 16th century, the area under its cultivation was a mere 275,000 tons in 1900.\(^1\) It expanded rapidly after 1909 when the technique of hydrogenating vegetable oils developed in Europe.\(^2\) The advent of artificial food fat industries in Europe using vegetable oils as raw materials enabled the utilisation of this plant. This event imparted a remarkable fillip to the production and exports of groundnuts from India, after the crop had remained in comparative quietude for about three centuries. The area under groundnut increased from 0.8 million acres in 1908-09 to 8.3 million acres in 1938-39 and to 15.5 million acres in 1960-61. India exported 71.4 per cent of the total production of groundnut in the pre-War period, 22.6 per cent in the First World War, 46.3 per cent in the pre-depression decade, 44.2 per cent in the depression decade, 18.4 per cent in the Second World War, 5 per cent in the immediate post-War period and less than 1.0 per cent during the 'fifties (TABLE VII.2). India was the largest exporter of groundnut in the World during the inter-War period. During the post-1939 period, though the production of groundnut continued to increase, it became export-inelastic.\(^3\) India became a net importer of vegetable oils in 1958.

The export of oilseeds from India in the raw form is partly accounted for by the absence of export-biased oilseed-crushing industry and the virtual absence of oil-using industries within the country. India's exports of

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1 Vide Chap. V, Sec. IV, p. 225.
2 Vide Chap. III, Sec. III, pp. 60f.
3 Cf. ante, Chap. II, pp. 18f.
<table>
<thead>
<tr>
<th>Period</th>
<th>Production of Groundnuts (thousand tons)</th>
<th>Estimated production of oil (thousand tons)</th>
<th>Imports of oil (thousand tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1908/14</td>
<td>349</td>
<td>71.4</td>
<td>249</td>
</tr>
<tr>
<td>1914/19</td>
<td>611</td>
<td>22.6</td>
<td>138</td>
</tr>
<tr>
<td>1919/29</td>
<td>977</td>
<td>150</td>
<td>452</td>
</tr>
<tr>
<td>1929/39</td>
<td>1877</td>
<td>38.3</td>
<td>829</td>
</tr>
<tr>
<td>1939/46</td>
<td>2354</td>
<td>138</td>
<td>431</td>
</tr>
<tr>
<td>1946/51</td>
<td>2353</td>
<td>280</td>
<td>119</td>
</tr>
<tr>
<td>1951/61</td>
<td>2734</td>
<td>827</td>
<td>18</td>
</tr>
</tbody>
</table>

Note: Figures in tons

Sources: Basic data obtained from APPENDIX III.1, III.2, and III.4.
groundnut oil was insignificant till 1929. The lack of demand for groundnut oil as an edible oil in the domestic market, the undeveloped domestic market for oilcakes, the rather crude techniques of oil-extraction mainly oriented to meet the local market and the absence of tanker facilities in shipping and railway services were formidable hindrances affecting the development of modern oilseed-crushing industries in India. Thus India depended largely on foreign markets for the disposal of oilseeds. All the above factors basically reflect a poor economic setup. The main lever of prosperity is income. Given the efforts to raise it there is no doubt that the whole economy will roll forward; oil-using industries as other industries will grow; we will export oil in place of seed, soap and paints in place of oil and manufactured goods in place of primary products.

The above does not necessarily indicate that there was a complete absence of groundnut crushing in India. Several factors aided the continuance of traditional local-market-biased ghani industry. Probably due to low level of technology in seed-crushing, people's preferences were stabilized for strongly flavoured oils. As one of the cheap edible oils in Indian market, groundnut oil was widely used as an adulterant in more and preferred oils like mustard, sesame, coconut, etc. Adulteration with

1 Extreme regional variations in the consumer preferences were noticed in India and they exist even today. As a cooking medium the people of Bengal, Bihar and Uttar Pradesh prefer mustard oil, Keralities coconut oil and the people of Madras, Maharashtra and Gujarat til or, alternatively, groundnut oil. Even linseed oil is consumed in some parts of India. Groundnut oil, though a first class oil for culinary purposes and ideal for processing, was the least-preferred edible oil in areas other than those that produced groundnut, namely, the south. Presumably this may be the cause of the late arrival of groundnut plant in India, as by then people's preferences had been strongly developed traditionally for more flavoured oils obtained from locally produced oilseeds.


groundnut oil flourished under pressures of the demand for cheap oil by a poor people, and by the circumstance that it was exceedingly difficult to distinguish pure oil from mixed oils without chemical analysis. Laxity in the enforcement of the measures against adulteration contributed to the spread of the practice. This kept going the industry of groundnut crushing by ghanis.

As compared to the pre-depression decade, the production of groundnuts, groundnut oil and groundnut cakes almost doubled in the depression decade. Nay, when the exports of groundnut doubled, those of groundnut cakes quadrupled. But the exports of groundnut oil registered only a small increase (see TABLE VII.2). As nearly 56 per cent of the crop was retained in India, the domestic crushing of groundnut developed substantially during the depression decade. As unlike in pre-1929 period, it appears that the crushing of groundnut was undertaken, in addition to the ghani sector, by the organized oil-milling industry in India as well. Several factors producing this development are briefly stated below:

First, as about the cheapest oil, its use as an adulterant became more and more popular.

Secondly, this period coincided with the establishment of oil-using industries like soap and Vanaspati in India. Several leading soap factories were established during the thirties. The demand for first grade refined groundnut oil from the Vanaspati industry encouraged the crushing of groundnut in modern crushing mills (TABLE VII.6). Thus, the consumption of groundnut oil increased with the growth of these industries.

Thirdly, while prices of ghee remained more or less stable during oil 1932 to 1939, prices of groundnut and Vanaspati declined, the former by 21 per cent and the latter by 32 per cent during the period indicated (see TABLE VII.6). Assuming the per capita income remaining constant—rather
it might have declined due to depression prevailing in India and the rapid growth of population during the thirties as compared with the previous decades—the price disadvantage as against ghee might have generated a demand shift in favour of edible oils and Vanaspati. The rapid increase in the production of Vanaspati during this period substantiates this inference.

Fourthly, though the prices of groundnut kernels in sympathy with other prices declined during the depression, the favourable prices of groundnut derivatives (oil and oilcakes) in India pushed up the growth of groundnut crushing. Several developments maintained the prices of groundnut oil in India. The policy of imperial preference raised the exports of groundnut oil from India to the empire countries. In addition, the growth of oil-using industries like soap and Vanaspati, as indicated elsewhere, created the need for establishing modern crushing mills at industrial centres. With the greater domestic retention of groundnut and their crushing, the availability of oilcakes in the Indian market more than doubled from an annual average of 198,000 tons during 1919/29 to 419,000 tons during 1929/39 (TABLE VII.2). Though India's domestic market was not in a position to absorb this sudden and large release of oilcakes, the sustained rise in the demand for oilcakes in European markets lead to a fourfold increase in oilcake exports from 48,000 tons per annum

1 Cf. ante, TABLE III.11

2 A sheltered market for many colonial products was created during the depression as the two leading empire countries—Britain and France—pursued the policy of imperial preference during the several years of depression.

3 Infra Sec. IV
during 1919/29 to 200,000 tons during 1929/39.\(^1\) This not only prevented a fall in oilcake prices but also raised their prices.

The depression decade was not the first time that India began exporting vegetable oils to the outside world. India had developed an extensive trade in vegetable oils since ages.\(^2\) During the second half of the 19th century, India was one of the major sources of supply of vegetable oils to the industrially advanced countries which later imported oilseeds from, and exported oils to, India. India's castor, sesame, mustard and coconut oils were in great demand all over the world. Nearly 40 countries were importing vegetable oils from India by the end of the 19th century.\(^3\) This progress of India's trade could not be sustained for a long time. Other countries entered the field and could outbid India as the Indian oils were of inferior quality and costs were high, the latter being due to the domestic oilseeds crushing industry using outmoded techniques,\(^4\) and perhaps also the virtual absence of the internal market for some by-products of the seed-crushing industry, particularly oilcakes.

The free exports of oilseeds and oilcakes was criticised by many political leaders suggesting instead, active encouragement to the exports of vegetable oils. It was contended that the continuance of such a policy involves a double loss. India exports cheap raw materials and pays dearly for the imports of manufactured products derived from the same raw materials, thereby discouraging economic development within the country.

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4. Infra, Sec. III, pp.369-386
With reference to oilcakes, the *Review of the Trade of India* (1878-79) wrote, "Under the present system India literally throws away enormous quantities of oilcakes, that is an invaluable food for cattle and is fertiliser for land."¹ The imposition of protective duty was advocated with the hope that such a step would encourage crushing within the country.² Several counter-arguments can be reasonably put forward against this line of thinking.

First, India at any time had no monopoly in the production of oilseeds.³ A variety of oilseeds and vegetable oils have appeared on the world markets since the beginning of the present century and technical developments have rendered mutual substitutability of different oleaginous materials easy.⁴

Secondly, several oilseeds were mainly grown initially for export markets in India. Their domestic utilisation grew later. Even the cultivation of groundnut, now the source of principal edible oil in India began initially with the export pull.⁵

Thirdly, it cannot be assumed away that by the mere imposition of export duty, seeds would be channelised to crushing and then exported as oil. The existence of outmoded techniques in the crushing industry, lack of transport facilities, prejudices on the part of metropolitan countries, difficulty of bulk transport of oil and non-availability of oil containers, undeveloped domestic market for the by-products of crushing industry and

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¹ pp. 31f.
³ Cf. ante, Chap. IV, Sec. IV, TABLES IV.8 to IV.11.
⁴ Cf. ante, Chap. III, Sec. V, pp. 100f.
undeveloped state of oil-using industries within the country were formidable difficulties pointing against this assumption.

Fourthly, it was also assumed that if the exports of oilcakes were stopped, cakes which are not exported will be used in India. It needs to be emphasized here that the prices of cakes in India were very unremunerative throughout the first five decades of the present century, the low price being the result of undeveloped market. Prejudice or ignorance regarding the economic uses of cakes would have given way only to education, propaganda and extension services, not to export duties.

Rightly, the Indian Fiscal Commission wrote,\(^1\)

"The main result, therefore, of imposing a protective duty on oilseeds would be, that the producer would be sacrificed to an unsound economic theory, and that the production of a valuable crop would be discouraged."

It needs to be emphasized here that the pattern of foreign trade of a country changes with the changes in the stages of economic development. In the pre-industrialisation stage, raw material exports predominate and with the growth of local industries—processing industries generally precede other manufacturing industries—exports of processed and semi-fully manufactured goods increase.\(^2\) To some extent, this shift may be the outcome of deliberate policy which aims to encourage local industries. This is well illustrated by the changes in the composition of Indian oilseeds exports since the beginning of the Second World War.

During the War period India's exports of groundnut were greatly curtailed first because of the difficulties of export and secondly because of the increased domestic demand for crushing, which grew as the War progressed. The latter development was aided by the factors like Allied

\(^1\) Op. cit., p. 239.

\(^2\) Cf. ante, Chap. IV, Sec. I, footnote on p. 124.
Powers' dependence on India for their requirements of oils and fats, cessation of the production of whale oil by European countries, reduced availability of Ceylonese copra and coconut oil, non-availability of palm oil from Far East sources and the rapid expansion of oil-using industries particularly, hydrogenated oil and soap, etc. The inordinate rise in demand for oilseeds and vegetable oils encouraged the Government to intervene in the market for these commodities by imposing controls and export duties.

The War time legacy of controls was continued in the post-independence period with a triple motivation, namely, (i) to ensure adequate supplies in the country for domestic consumption, (ii) to conserve oilcakes within the country, and (iii) to provide employment by facilitating the development of oilseed crushing industry.

Partly as a result of the deliberate manipulation of the export trade in oilseeds, the export of groundnut declined from an annual average of 431,000 tons in the War period to 119,000 tons in the early post-War period and 18,000 tons during the 'fifties. On the contrary, the exports of groundnut oil almost doubled from an annual average of 8,000 tons in 1929/39 to 15,000 tons during 1939/45; again it doubled to 32,000 tons during 1946/51 and to 63,000 tons during the First Plan period. During the Second Plan period, however, they fell to 9,000 tons per annum. The fall in groundnut exports was not fully compensated by the rise in the exports of groundnut oil. This is well illustrated by the fact that the exports of groundnut and groundnut-oil, viewed as one unit in total kernel

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1 Cf. ante, Chap. IV, Sec. I, pp. 130-32.
2 Cf. ante, Chap. IV, Sec. I, pp. 133f.
3 Cf. ante, Chap. IV, Sec. II, pp. 134-136
equivalents, declined from an annual average of 838,000 tons during 1929/39 to 464,000 tons during 1939/45, 194,000 tons during 1945/51, 175,000 tons during the First Plan and 59,000 tons during the Second Plan. It is with reference to this fact that the Government's policy objectives should be viewed.

As illustrated in Chap. IV, our exports of groundnut seeds and oil remained below the declared quota in the majority of the post-independence years. Our oilseeds and oils could not move, barring a few First Plan years, because our cost-price structure was out of tune with the world cost-price structure. As explained earlier, this has been the result of a combination of factors, principally, continued inflationary pressures which drove Indian prices up, out of alignment with international prices; the over-valuation of the currency which this led to in the contest of a rigidly fixed exchange rate; and by the continued existence of inefficient crushing methods.

As compared with the first four decades of the present century, the rapid growth in oilseeds production could not be sustained after 1939 due to the diversion of agricultural resources toward the cultivation of foodcrop during the forties and decline in oilseeds yields during the fifties. These factors combined with inordinate rise in domestic demand for oleaginous products reduced export supplies. As oilseeds are substitutable among different uses, the price of groundnut is subjected to the overall supply position of oilseeds as a whole; since this overall supply position fell short of demand emanating from the development of oil-using industries like Vanaspati, soap, paints-varnishes, etc., the increasing per capita

1 Cf. ante, Chap. IV, Sec. III.
2 Cf. ante, Chap. IV, Secs. II and III; Infra, Sec. III.
3 Cf. ante, TABLE II.1.
income of a growing population and continued inflation, groundnut prices rose year after year.

The disappearance of the export surplus in aggregate terms was, apart from the above factors, aided by the rapid emergence of other oilseed-producing countries as exporters. Indian export markets have been captured by the countries of tropical and semi-tropical Africa and some Latin American countries like Argentina and Brazil. The preference of several European crushers to import oilseeds instead of oil in combination with our ban on the export of seeds precluded India's participation in the export trade.

III. THE SEED-CRUSHING INDUSTRY IN INDIA

Oilseed crushing has been practiced in India since times immemorial. However, it had not advanced further than what the indigenous cottage industry would normally do. It functioned more or less as a rural ghani industry having local appeal and utility. Large-scale crushing of oilseeds with modern appliances does not appear to have been started until after the close of the First World War. Its development gathered momentum during the depression decade due to the factors enumerated above. The Second World War gave a further impetus to the oilseed crushing industry; to-day the bulk of the oilseeds produced are crushed within the country. Thus the crushing industry emerged as a modern industry from its confines of indigenous industry during the last 30 years.

The oilseed crushing industry in India at present may be divided into the following categories: (i) the bullock-driven ghani and other indigenous appliances; (ii) power-driven ghans; (iii) oil-mills registered under the factories act, equipped with more or less modern
crushing appliances; (iv) solvent extraction plants.

No accurate statistics are available regarding the number of power-mills and ghanis.¹ According to the Live-stock Census of 1951 there were, during the year, 446,436 ghanis in the country, 204,006 ghanis having five seers capacity and 242,430 ghanis having more than five seers capacity. According to the Taxation Inquiry Commission and the Khadi Commission there are about 4 lac ghanis in India. It is also estimated that there were 1960 "Wardha" ghanis with 10 seers crushing capacity each. According to the estimate of the Indian Central Oil Seeds Committee the number of oil mills in the Indian Union was 8,201 in 1956.² It is also estimated by this body that during the same year, there were 3,475 expellers, 16,432 rotary ghanis (power-driven), 155 hydraulic presses and 4,836 other power ghanis. According to the Taxation Inquiry Commission, there were about 1,050 large mills and 8,600 small mills using power-driven ghanis and screw presses in 1954.

It is not known definitely how many of these mills and ghanis are actually working regularly. In addition to this, there were about 6

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¹ The data in this para is reproduced from Government of India, Report of the Oilseeds Crushing Industry Inquiry Committee, Delhi, 1956.

² STATEWISE, NUMBER OF OIL MILLS IN THE INDIAN UNION:
Andhra (438), Assam (72), Bihar (426), Bombay (1,236), Madhya Pradesh (290), Madras (858), Orissa (35), Punjab (1,302), Uttar Pradesh (1,683), West Bengal (254), Hyderabad (280), Madhya Bharat (199), Mysore (163), Pepsu (180), Rajasthan (315), Saurashtra (158), Travancore-Cochin (138), Ajmer (8), Bhopal (22), Delhi (73), Himachal Pradesh (4), Kutch (4), Manipur (5), Tripura (20), Vindhya Pradesh (41). TOTAL: 8,201. 'Mill' means any premises in which or in any part of which oilseeds are crushed or are ordinarily crushed with the aid of power. Vide, Report of the Oilseeds Crushing Industry Inquiry Committee, op. cit.
solvent extraction plants in 1956, having a total capacity of about 200 tons of oilcakes per day. The progress of solvent extraction industry has been rapid since the beginning of the Second Plan. The policy of the Government of India to restrict export of expeller groundnut cake but to allow unlimited export of de-oiled cake has given a spectacular fillip to the solvent extraction industry in the country. There are now about 30 plants with a throughput capacity of about 500,000 tons of oilseeds and an additional 115 units have been licenced to provide a new throughput capacity of about 2 million tons of oilcakes a year. The relative efficiency of the various crushing processes is examined elsewhere. 

According to the Report\(^2\) the Indian oil mills (other than ghanis) have a crushing capacity of about 30.9 lakh tons on the basis of one shift of 8 hours a day. It is estimated by the Indian Central Oilseeds Committee that only 20.7 lakh tons of oilseeds are crushed by power mills. The total crushing capacities of ghanis has been estimated to be 19.4 lakh tons. According to the Report, nearly 67 per cent of the installed capacity of oil mills and about 50 per cent of the crushing capacity of ghanis was utilised. Dr. K.S. Murti in a dissenting note to the Report\(^3\) maintained that the total installed capacity of the power mills should be calculated on three shift basis which amounts to about 92.7 lakh tons. From the data furnished by the Khadi Board, he argues that 11.9 lakh tons of oilseeds are crushed by ghanis

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annually. Hence, according to him, nearly 22.1 per cent of the installed capacity of mills and 61.3 per cent of the installed capacity of ghanis were utilised. Dr. Murti maintains that the total installed crushing capacity of the existing mills and ghanis (92.7 + 19.4 = 112 lakh tons) far exceeds the total production of major or minor oilseeds (82.6 lakh tons in 1956). Hence, there is a considerable scope for increasing the crushing of oilseeds in the country with the existing capacity.

It is the common feature of the oilseeds crushing industry in India that quite frequently many mills and ghanis do not operate on a continual basis. Their seasonal working and under-utilisation is ascribed to a number of factors.

First, the price-push provided by the war-time demand had encouraged the mushroom growth of plants both in the ghani and mill sector during the Second World War and, as such, very little attention was devoted towards technological, economic and other aspects of working.

Secondly, the same production unit does not crush different kinds of seeds. Most of the mills and ghanis are not equipped with preparatory and other equipment suitable for treatment of different oilseeds produced in different seasons in the nearby areas.

Thirdly, very few production units have satisfactory storage facilities and these results in either non-availability of seeds for continuous operation or the deterioration of the quality of crushing materials.

Fourthly, the market of oilseeds and vegetable oils has become unstable because of wide fluctuations in production and export quota (declared by the Government from time to time). The prices of oilseeds
fluctuate so erratically that the economic production by peace-meal purchase and sale at the prevailing market rate has been rendered impossible. Only a few big crushers hedge their crushing requirements. This instability particularly affects the ghani-sector.

The production figures of the raw materials which are generally used in this industry are indicated below. The proportion of production crushed varies with different oilseeds (See TABLE VII.1). The production of five major oilseeds amounted to 68 lac tons in 1961-62. In addition to the five major oilseeds, India produces Safflower (one lac ton), Khursani (2 lac tons), Cottonseeds (22 lac tons) and Copra (6 lac tons); their combined production amounts to 31 lac tons. Over and above this supply, the total estimated production of minor oilseeds was 3-4 lakh tons in 1961-62. Thus, the total production of oilseeds and oilnuts comes to 102 lac tons (68 + 31 + 3). Out of this supply, nearly 60 lac tons are available for crushing in India. The rest is used locally. These figures indicate that the Oilseeds Crushing Industry Enquiry Committee Report underestimated the quantum of seeds crushed by different constituents of the oilseeds-crushing industry. Incidentally, the Third Plan target for oilseeds production is 98 lac tons when actually India is producing this quantity. Of course, the Plan target is not all inclusive and covers only the five major oilseeds, but it is now time that we give up the traditional dichotomy of 'five major oilseeds' and 'minor oilseeds' and plan the production targets with existing realities.

1 The following are the principal minor oilseeds produced in India: Neem (Azadirachta Indica), Karanj (Pongamia Glabra), Undi (Calophyllum Inophyllum), Mahua (Bassia Latifolia), Khakan (Salvadora Oleoids), Pisa (Actinodaphne Hookeri), Kokum (Garcinia indica), Dhupa (Vateria indica), Kusum (Schleichera trijuga), Tobacco seed (Nicotiana tabacum), Sam, Ambadi (Hibiscus cannabinus).
The quantities of oil produced from five major oilseeds in 1950-51 were of the order of 12 lac tons which rose to 14 lac tons in 1955-56 and 20 lac tons in 1961-62. To this may be added nearly 50,000 tons cottonseed oil, 40,000 tons solvent extracted oil, 2 lac tons coconut oil and 2 lac tons oil obtained from all minor oilseeds. Thus, the present availability of oil (1961-62) may be put at 25 lac tons. By the end of the Third Plan, the total availability of oil is expected to rise to 29 lakh tons derived from five major oilseeds (24 lakh tons); solvent-extracted oil (1.60 lakh tons), cottonseed oil (1.00 lakh tons) and coconut oil (2 lakh tons).¹

The efficiency with which oilseeds are crushed is an important factor in the supply of oils. Broadly, three commercial oil-winning methods are evolved. First, oil is expelled from the seeds by crushing; secondly, oil is dissolved out of seeds by the use of chemical solvents; thirdly, oil is released by treatment with boil-water or steam which is known as 'chemical rendering'. The first method is more common in India. The latter two methods are usually applied in advanced countries. The solvent extraction plants are few and of recent origin in India. The third method which is usually applied in animal and marine fat industry in foreign countries is non-existent.

The following are the various methods used in the oil-winning industry in India. The second column indicates the relative efficiency of each method.

¹ Third Five-Year Plan, p. 490.

moisture content as compared with ghani-produced cakes. Till recently, only expeller variety cakes were exported.

TABLE VII.3

RELATIVE EFFICIENCY OF VARIOUS CRUSHING METHODS*

<table>
<thead>
<tr>
<th>Machinery used</th>
<th>Oil left in the cake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village ghani</td>
<td>12 - 15%</td>
</tr>
<tr>
<td>Hand screw press</td>
<td>11 - 12%</td>
</tr>
<tr>
<td>Power-driven rotary ghanis</td>
<td>9 - 11%</td>
</tr>
<tr>
<td>Hydraulic press</td>
<td>7 - 8%</td>
</tr>
<tr>
<td>Expellers</td>
<td>4 - 8%</td>
</tr>
<tr>
<td>Solvent extraction</td>
<td>1 - 2%</td>
</tr>
</tbody>
</table>

* From personal inquiry.

It is not possible to get accurate figures of the proportion of seeds crushed by ghanis. The relative share of ghanis and mills in crushing various oilseeds and oilnuts are given in TABLE VII.4 as given by the Report. The oil-extraction rates of ghanis and mills are given in the Indian Central Oilseeds Committee's report. The quantity of different oilseeds available for crushing is worked out on the basis of the data given in TABLE VII.1. The oil-milling loss in ghanis industry is calculated on the basis of 1958 production. This loss may amount to 54,000 tons or Rs.11 crores on the basis of 1958 prices. According to Dr. K.S. Murti, the loss of oil involved by

1 Ghani crushing no doubt yields slightly larger amount of oilcakes but oil-mills also yield cakes and mill-produced cakes fetch better prices because of uniform quality and lesser amount of moisture content as compared with ghani-produced cakes. Till recently, only expeller variety cakes were exported.

<table>
<thead>
<tr>
<th>Oilseeds/oilnuts</th>
<th>Percentage share of production crushed by ghanis</th>
<th>Oil-milling percentage in ghanis</th>
<th>Oil-milling percentage in mills</th>
<th>Oil-milling loss (4-3)</th>
<th>Total oil-seed available for crushing in 1957-58</th>
<th>Oilseeds crushed by ghanis as per Column 2</th>
<th>Actual Price oil-milling loss calculated as per Column 5</th>
<th>Calculated oil-milling loss in value Rs. in millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundnuts (shell basis)</td>
<td>20%</td>
<td>35%</td>
<td>40%</td>
<td>5%</td>
<td>2,394</td>
<td>479</td>
<td>24.0</td>
<td>1,900</td>
</tr>
<tr>
<td>Coconuts (Copra basis)</td>
<td>20%</td>
<td>58%</td>
<td>62%</td>
<td>4%</td>
<td>321</td>
<td>64.2</td>
<td>2.6</td>
<td>2,500</td>
</tr>
<tr>
<td>Linseed</td>
<td>30%</td>
<td>30%</td>
<td>35%</td>
<td>5%</td>
<td>203</td>
<td>60.9</td>
<td>3.0</td>
<td>1,800</td>
</tr>
<tr>
<td>Rape and mustard</td>
<td>37%</td>
<td>30%</td>
<td>35%</td>
<td>5%</td>
<td>306</td>
<td>298.2</td>
<td>14.9</td>
<td>1,800</td>
</tr>
<tr>
<td>Sesamum</td>
<td>83%</td>
<td>35%</td>
<td>40%</td>
<td>5%</td>
<td>269</td>
<td>223.3</td>
<td>11.1</td>
<td>2,200</td>
</tr>
</tbody>
</table>

TOTAL | 54.0 | 108.7 |

Note: Cottonseeds and Castorseeds are mainly crushed by mills.

+ Figures worked out on the basis of data given in TABLE VII.1.
the ghani crushing as compared to power crushing is estimated at
60,000 tons in 1956 and 1,05,400 tons in the last year of the
Second Plan.

The oilseeds Crushing Industry Inquiry Committee (1956) and
the Village and Small-scale Industries Committee (1955) were in favour
of encouraging the ghani industry even at the cost of putting
constraints on mill industry. Their relevant arguments may be
briefly stated. It was argued that the ghani industry offers more
employment opportunities than those offered by other methods of
oil-extraction.¹ It provides a part-time remunerative employment to
agricultural labourers-cum-cultivators. The industry gets its raw
materials from the village itself. It possesses the ready market for
its products — oil and oilcakes — in the village itself, and,
therefore, does not depend upon transport facilities which are so
necessary for oil-mills. The oilcakes remain within the village where
it can be used for cattle feeding as well as for manure. We shall
examine these claims later.²

It needs to be emphasized here that the higher cost of
production of small-scale industries, as indicated below, is not

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¹ It is contended that the Ghanis industry (and for that purpose,
the entire range of village and small-scale industries) has a
larger employment potential. The number of persons employed
in oil mills amount to 82,010 and about 5 lakh persons are
probably wholly or partially employed in the ghani industry.
If the crushing capacity of both these sectors were fully
utilised, the number of employed persons for the mill
industry would increase to 120,000 and for the ghani industry
7 lakhs. Report of the Oilseeds Crushing Industry Inquiry
² Infra, pp. 380-386
entirely due to the technical inferiority of the productive process. First, small producers have to spend 8 to 9 per cent more on raw materials than their mill competitors. They cannot maintain any inventory worth the name nor they can use hedging facilities enjoyed by large-scale producers. Telis has to pay high prices of oilseeds crushed by them due to their intermittent purchases. Secondly, next in importance to raw materials is wage cost which however may decline if the improved techniques are employed in small-scale industry. Thirdly, the proximity of the market for raw materials and finished products is claimed by the ghanis and other small-establishments in villages. But transport cost does not constitute an important item in the total cost of production. Whatever transport cost incurred by them may not be cheap because of bad roads, inferior means of transport and containers. Fourthly, the small producers have to pay about double the rate of interest paid by the mill sector and yet they suffer from non-availability of adequate finance. Fifthly, the mill sector also enjoys much better marketing facilities whereas 'pyramiding' of the product prices of small-scale enterprises is quite common due to host of middlemen.

2 Report, op. cit., pp. 37, 87.
3 Kedarnath Prasad, op. cit., p. 159.
4 Ibid., p. 160.
Sixthly, the small-scale production does not facilitate the fuller use of byproducts. As pointed out elsewhere, oilcakes can be more profitably used in human and industrial consumption instead of their present inferior uses as cattlefeeds or manure in villages.

While examining in general, the case for village and small-scale industries, the Karve Committee recommended several restrictive and regulatory measures for the large-scale industry. The measures recommended by the Committee may be classified into the following categories: (1) Restriction on expansion of current production and on spheres of production, (2) Restriction on expansion of the productive capacity, (3) Cess and differential excises, (4) Rebate and subsidies, and, (5) a large number of positive measures designed to improve the competitive strength of small-scale producers like the improvement in the technique of production, organisation of producer and marketing cooperatives, provision of raw materials and credit facilities, etc. We shall examine these measures with reference to the oilseeds crushing industry.

Restriction on current production and reservation of spheres:

For ensuring the ghani industry a definite field of operation, the following suggestions were made by the Karve Committee:

i. reservation of the crushing of certain edible oilseeds such as sesamum, rape-mustard exclusively for the ghani industry,

ii. diversion of larger proportion of groundnut to ghanis, and

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1 Infra, Sec. V.

iii. allocation of the whole of cottonseed to the mill industry to enable it to maintain utilisation of its capacity.

Our experience has demonstrated that reservation of fields of production in the oilseeds crushing industry would neither be feasible nor desirable because of the large number of ghanis and mills, their wide geographic dispersion and intermittent operation. Such reservation of spheres in the different segments of textile industry has worked to some extent mainly because of the following reasons: First, a fewer number of textile mills' operations were to be controlled. Secondly, their different lines of production were known to the Government because of the levy of excise. Thirdly, it is comparatively easy to determine different spheres of production like dhotis, saris, coarse cloth, mercerised cloth, etc. As regards the third recommendation, it may be pointed out that fuller utilisation of the installed capacity of the mill-sector is not feasible through adopting cottonseed-crushing for reasons stated elsewhere. The recommendations of the Committee would further prevent mills from making full use of their existing capacity. "An idle manufacturing capacity", as Nurske has pointed out, "is a waste of the scarcest factor of production capital."\(^2\)

Restriction on production capacity

The Karve Committee recommended that "no new mills should be allowed to be set up except in areas where alternative methods of

\(^1\) infra, pp. 414-418

\(^2\) R. Nurske, op. cit., p. 194
crushing oilseeds are not feasible.\textsuperscript{1} As there is considerable excess capacity in the mill sector, it is argued that such restriction does not involve any regress towards inferior technology in as much as fuller utilisation of the existing capacity of the oil-mills is not prohibited. It may be pointed out here that in underdeveloped economies in particular, the production pattern may include simultaneously varying stages of technological processes from automatic to use of manual labour on a small scale. It is not correct to rule out any process in favour of any other by arbitrary state decisions, as this is a matter of combining the various factors of production in varying ratios. This will depend on the economic conjuncture of the entrepreneur, price of the product and of the factors of production. The imposition of arbitrary restrictions on the operation of these natural market forces would inevitably generate artificially distorted production structure in the oilseeds crushing industry.

Cess and Differential Excise

The Karve Committee, while explaining the objective of excise taxation, have observed: "the excise duty may be said to have three objectives. The first is the raising of funds from the consumers of a product for rehabilitating a section of the producers of that product. The second objective is that of draining away from

\textsuperscript{1} Op. cit., p. 115. Compare: "Within the limits set by the need to avoid shortage of goods on the one hand, and to the extent to which production in small units can be organised effectively to take advantage of a larger market, in any individual case, on the other, the balance of public advantage will determine whether and at what level the capacity of a large-scale industry should be limited." \textit{The Second Five-Year Plan}, p. 437.
entrepreneurs in the advanced section the extra profits that will accrue to them from national policy. The third objective or rather result of the levy of excise would be the creation of price differentials in favour of small-scale and village industry."

In the first argument the need for the rehabilitation of small-scale producers is considered axiomatic. There is no case for penalizing consumers of a particular product to rehabilitate a section of inefficient producers who cannot survive in the market by themselves. In the natural market process, the cost differential between efficient and inefficient producers would weed out the latter unless the government intervenes drastically.

The third objective needs to be examined in the above context. Clearly, penal duties on mill production will generate a disincentive effect on the mill sector. For example, the excise duty on a ton of oil, according to a new system of compound levy introduced in 1959, was Rs.110 approximately. The total cost of crushing seeds to produce a ton of oil in a modern mill was roughly equal to this amount.¹ To ensure the production of small industries under state patronage and taxing the factory goods is like putting a premium on inefficiency.

In stating the second objective it is contended that the mill producers will secure extra profits through their semi-monopolistic position stemming from the restrictionist policy of the non-expansion of the mill-sector. It may be counter-argued here that several output restrictions on the existing production units in the mill sector would not enable them to attain the most profitable level of output and, hence, optimum profits. The second objective may be justified as a

¹ The excise duty on mill-made edible oils were removed in 1963-64 budget.
corrective measure in the event of adopting sectoral restrictions in the oilseeds crushing industry. The need for differential excise may not arise if the artificial restrictions are scrapped.

Rebate and Subsidies

No direct subsidies were paid to the Telis except for the installation of improved ghanis which is a subsidy on fixed cost. General subsidies are not feasible financially, because the financial burden of subsidies involved in all cases of small-scale production will be enormous inasmuch as this sector happens to provide a greater volume of employment than the mill-sector. A committee appointed by the Khadi and Village Industries Commission under the Chairmanship of Mr. Hukkerikar to evaluate the progress of cottage industries in its report (1959) noted that,

"the rebate on retail sales of ghanis oil does not appear to have served the purpose..... It has given rise to a number of mal-practices. Its payment poses several administrative difficulties. Besides, the case for a subsidy as such itself is weak. For instance, the rebate on Kardi oil, which in some parts of the country is considered edible, is not required at all because the whole of it is produced on ghanis and there is no competition from the oil mills. In any case we consider that there is no case for the continuance of the rebate on retail sales at present."1

Other measures:

The Oilseeds Crushing Industry Inquiry Committee following the guidelines of the Karve Committee suggested several measures which consist of (i) improving the existing ghanis, (ii) replacing existing ghanis by improved ghanis by providing inducement through subsidising capital cost, (iii) establishment of a network of oilmen's cooperatives

to ensure the availability of raw materials and finance at a reasonable cost, storage and marketing of oil, etc., (iv) preferential purchase policy in favour of ghani oil by the government and semi-government institutions (v) concessional rate of railway freight for the movement of ghani and allied equipment, etc. While positive steps for strengthening the basis of any productive industry is desirable, the discriminatory measures are undesirable for it will perpetuate the traditional inefficiency of the ghani sector.

Apart from the committees referred to above, the Planning Commission has consistently supported the cause of village and small-scale industries in the first three Plans.\(^1\) It has advocated the promotion of these industries to produce consumer goods for the purpose of providing employment, raising scarce capital and saving foreign exchange, bringing about equitable distribution of income, mobilizing unutilized labour and resources of the villages, increasing the production of consumer goods and finally reducing the social cost that is inherent in large-scale industrialization. As the examination of these arguments involves digression from the main theme of the thesis, the discussion that follows is brief.

The controversy regarding the scale of production centers round the problem of choice of techniques. Except in a completely planned economy, the choice of a particular technique is functionally related to factor prices, product prices and entrepreneurial decisions. We cannot decide on a priori reasoning which particular combination of the factors of production is the best. This will continually change. The entrepreneur should be left free to decide what technique is best for

\(^1\) The Third Plan, pp. 426-451.
him as he has all stakes in his enterprise. His entrepreneurial decisions regarding the combination of the factors of production or of the techniques subject only to free pricing of the factors and final product would result into maximum satisfaction to himself, the consumers and the society at large. With this explanation in the background an attempt is made below to examine several arguments put forward by the advocates of small-scale industries.

The choice of a technique under economic development must be examined in relation to its savings potential. It is the savings from income that provides the means of growth. The increase in output as a result of the additional employment created in the small-scale sector for unemployed or under-employed and their resulting income and savings would not be substantial because the marginal productivity of labour in majority of small-scale units is likely to be near zero or negative. The encouragement to small units irrespective of factor price and product price considerations would merely shift the burden of disguised unemployment from agriculture to the small-scale sector. Society cannot become richer by producing less. Such a policy is fraught with the risk of per head productivity being too low to create any reinvestible surplus. If workers in small-scale industries, drawn from disguised unemployment, enjoy tariff protection from the competition of low-cost factory goods through higher prices, as Messrs. Vakil and Brahmanand argued,¹ this leads to a greater subsidy than that implicit in disguised unemployment on the farms and the result is therefore a reduction in the resources that might have channelled into investment. The artificial diversion of resources from other productive

¹ Planning for an Expanding Economy, pp. 150, 282.
sources to inefficient units would make marginal productivity of
labour employed in small units negative. Our experience with the
performance of the cottage and small-scale sector has consistently
shown that these industries have failed to compete effectively with
factory goods in spite of substantial state patronage for several
of them. Moreover with numerous decentralized units the problem of
collecting savings for further expansion would be difficult. It is
comparatively easy to plough back incomes in organized industries for
further progress.

To obviate the productive inefficiency of crude methods employed
by village and small-scale industries, Professor Mahalanobis has argued
that, while the size of the industry will remain small, it will be
mechanized and modern techniques will be applied.¹ It is difficult to

¹ Professor Mahalanobis stated that the emphasis on capital-light
and labour-intensive industries is for releasing capital
resources for the heavy industries which the Indian economy
lacks. The long-term aim is to use as quickly as possible
the most technologically advanced machinery for the
production of both investment and consumer goods. This is
not immediately possible because of the lack of a
sufficiently broad base of heavy industries. It is therefore
necessary to plan for the transition in which preference will
be given to labour-intensive industries to create as much
employment as possible in the immediate future, and at the
same time, to release capital resources for the heavy
industries. However, as the economy expands and employment
increases, the need for giving preference to labour-
intensive but low efficiency production would decrease.
As the supply of power, machinery and other capital goods
increases, a gradual changeover would be made to more
efficient forms of production by the increasing use of
machinery driven by power. Vide P.C. Mahalanobis, "The
Approach of Operational Research to Planning In India",
say how far one can combine the small size with mechanization to reap the benefits of modern technological developments. The economies of mechanization are mostly economies of scale.

It is not contended here that all types of small-scale production is inefficient. The labour-intensive production of artistic goods would even survive the onslaught of automation. However, the decisions regarding the selection of a particular process should be left to individual entrepreneurs rather than subjecting to the dubious preferences of the state power.

The Planning Commission emphasized the role of small-scale production as a measure for equitable distribution of national income.\(^1\) The choice of a particular technique is governed by its capacity to ensure maximum production. It is then that all can have enough, not by producing least. The small-scale production with outdated techniques can hardly ensure maximum production. The distribution of wealth as an issue can be considered only after producing wealth. Moreover, a task more eminently suitable to be handled by fiscal levies should not be left to a method of productive process.

Many justify the advocacy of small-scale industries on the basis of their capacity to provide more employment as compared with large-scale production. Mechanization may probably reduce employment in the short-run but its capacity to generate new fields of wider employment in the long run is generally accepted since the days of Adam Smith. It is important to emphasize here that employment is a function of overall production, not necessarily this or that technique.

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\(^1\) Second Five-Year Plan, pp. 30f; Third Five-Year Plan, Chap. XXV.
Unemployment in our country is a long period problem and can be solved only by means of rapid economic development. All attempts must be directed to raise G.N.P. Inefficient production all round cannot add up to larger aggregate national employment, as such production must impinge adversely on G.N.P. The small-scale sector may create an illusionary impression of providing more employment; they may really prove more capital consuming in the long run and the marginal productivity of all inputs, including labour, may be low from the start. A country where capital is scarce cannot tolerate such a situation indefinitely.

The assumption, which is often made that there is an abundant and cheap supply of labour in India might seem correct at first sight. But it calls for certain qualifications. First, the attachment to land, as in agricultural countries generally, is so deep-rooted that the incentive wage to bring about an occupational shift must be substantially larger than the subsistence wage. Even in predominantly agrarian countries, industrial wages are much higher than wages in rural employments. Secondly, the adoption of cottage and small-scale industries as subsidiary occupations by the underemployed is hindered by the social constraints; in India the hand industries have been mostly caste occupations. Thirdly, occupational shift from mostly unskilled labour entails larger initial investment to develop a degree of craftsmanship. As pointed out by George Rosen, "labour in India may be abundant in aggregate but it is neither cheap in relation to production

1 The Third Plan, Chap. X.
nor abundant in specific type of areas."¹ Fourthly, government policy in India since Independence has had the effect of raising labour cost directly in terms of higher wage and amenity cost and have tended to reduce greatly 'the area of manageability of labour'.²

The small-scale and cottage industries have been justified on the ground that they will release scarce capital since the capital-output ratio in these industries is low. We cannot decide on apriori reasoning which particular combination of the factor of production is the best. This may continually change. Moreover, it may not be correct to assume that the aggregate capital coefficient is lower in small-scale industries as compared with large-scale industries. The capital-output ratio in the case of large-scale consumer goods industries might be larger per industry but the capital-output ratio per unit of output may not be large, if due note is taken of the internal and external economies in the case of large-scale industries, and of the effects on costs of double and triple shift working. The spreading of the fixed cost over a larger volume of output will give rise to a certain measure of economy in the cost of production. Moreover, capital-intensive method of production may entail higher capital-output ratio only on the assumption of constancy of productivity of labour. But it is a fact of history that labour productivity has generally risen with the growth of capital intensity. The small-scale industries do not possess such a pronounced levering effect on labour productivity.

² Ibid., p. 119.
in the long run.

As Colin Clark has aptly illustrated, 1

"The extreme preoccupation with capital investment has led to the neglect of the other factors in growth and economic development: improvement in education, the development of the legal and institutional framework required for a market economy - a dependable currency and banking system, general understanding and observance of laws on property, contract, company organization, restraint of trade, etc., heavy investment in transport and other forms of communications."

Productivity rests on a variety of human factors and not on capital alone. There are a host of institutional factors which adversely affect free play of market mechanism and income distribution in society - lack of credit and marketing facilities, exploitation by money-lenders and intermediaries, social rigidities, the uncurious, orthodox and fatalist outlook, etc. 2 Unless they are modified or abandoned, capital investment cannot hope to be as productive of output and incomes as in western countries. 3

Professor Dantwala has supported the case of small-scale industries by arguing that "it was only when such a chance was afforded to the indigenous large-scale sector through a vigorous system of tariffs, etc. and intensive Swadeshi movement that it was able to compete against the products of foreign manufacturers. The magnitude of protection now demanded by the small-scale sector and the sacrifice in terms of higher consumer's prices are relatively smaller than those demanded during the last 25 years by the large-scale sector in this country." 3 This raises

a fundamental question: Is the objective of economic activity keeping alive a certain technique of production or is it production for consumption at lowest prices and factor cost? We are interested in maximizing output and minimizing wastage of scarce resources. The aim of economic activity is not that of preserving outdated inefficient techniques.

To summarize: First, it may not correct arbitrarily to rule out any production process in favour of another. Except in a wholly planned economy, the choice of a particular technique is basically related to factor prices and product prices. The entrepreneurial decisions regarding the combination of the factors of production or of the techniques subject only to free pricing of the factors and final product would result in the maximum satisfaction to himself, to consumers and the society at large. Secondly, employment is a function of total national product and not necessarily of this or that technique. The emphasis on small-scale industries may lead to lower marginal productivity of labour; they may not generate larger employment per unit of capital investment and may be capital consuming in the long run.

IV. GROUNDNUT-OIL- USING INDUSTRIES

India's indigenous crushing industry, which had taken up the crushing of groundnuts during the inter-War period was catering for the local market and was not export-biased. The local market for cheap edible oils was vast and growing. In the absence of the remunerative market for oilcakes, India seems to have resolved the problem of disposing oilcakes by exporting them to European markets. It was only since 1939 that the growth of modern oil milling industry was
accelerated in India when the oil-using industries (Vanaspati, Soap, Cosmetic, Lubricants, etc.) and the domestic market for oilcakes developed. It appears, therefore, that the same factors which contributed to the localisation of oil milling industry in Europe prior to 1939 have strengthened the growth of oil milling industry in India since 1939.¹

The estimated utilisation of vegetable oils are indicated in TABLE VII.1 and VII.5.

From the tables we find, first, that the entire supply of rape and mustard oil and 76 per cent of sesame oil is utilised in India in the raw form for direct consumption. Nearly 50 per cent of the copra production is crushed for oil. From the available supplies, nearly 53 per cent coconut oil is used for non-edible purposes. In contrast to this, the industrial uses claimed nearly the entire production of castor oil and 64 per cent of linseed oil.

Secondly, only 9 per cent of the total production of cottonseed is crushed. Industrial uses claim 25 per cent of the total production of the cottonseed oil; the rest being diverted to Vanaspati manufacture.²

The share of cottonseed oil in Vanaspati manufacture increased from 0.6 per cent in 1956-57 to 5.9 per cent in 1960-61.

Thirdly, in cases of groundnut oil and sesame oil the proportion of oil used for direct consumption in raw form is declining; their use as raw material in Vanaspati industry have been fastly increasing. The use of sesame oil in Vanaspati manufacture was made obligatory by The Vegetable Oil Products Control Order, 1947. As sesame oil is more

¹ Cf. ante, Chap. III, Sec. V,
² Infra, pp. 400 ff
### TABLE VII.5

**ESTIMATED UTILISATION OF OILS- ALL INDIA**

(As percentage of estimated total internal utilisation during the triennium ending 1955-56)

<table>
<thead>
<tr>
<th>Oil</th>
<th>For edible use</th>
<th>For Vanaspati manufacture</th>
<th>For Soap industry</th>
<th>For miscellaneous industrial uses - Paint &amp; Varnishes, lubrication, toilet making, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundnut</td>
<td>63.1</td>
<td>33.8</td>
<td>3.1</td>
<td>..</td>
</tr>
<tr>
<td>Sesamum</td>
<td>77.3</td>
<td>10.2</td>
<td>..</td>
<td>12.5</td>
</tr>
<tr>
<td>Castor</td>
<td>..</td>
<td>..</td>
<td>2.4</td>
<td>97.6</td>
</tr>
<tr>
<td>Rape &amp; Mustard</td>
<td>98.9</td>
<td>..</td>
<td>0.2</td>
<td>0.9</td>
</tr>
<tr>
<td>Linseed</td>
<td>35.5</td>
<td>..</td>
<td>0.7</td>
<td>63.8</td>
</tr>
</tbody>
</table>

(As percentage of estimated total internal utilisation during the triennium ending 1959-60)

<table>
<thead>
<tr>
<th>Oil</th>
<th>For edible use</th>
<th>For Vanaspati manufacture</th>
<th>For Soap industry</th>
<th>For miscellaneous industrial uses - Paint &amp; Varnishes, lubrication, toilet making, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundnut</td>
<td>58.4</td>
<td>38.9</td>
<td>2.7</td>
<td>..</td>
</tr>
<tr>
<td>Sesamum</td>
<td>76.1</td>
<td>12.2</td>
<td>..</td>
<td>11.7</td>
</tr>
<tr>
<td>Castor</td>
<td>..</td>
<td>..</td>
<td>2.4</td>
<td>97.6</td>
</tr>
<tr>
<td>Rape &amp; Mustard</td>
<td>99.0</td>
<td>..</td>
<td>0.2</td>
<td>0.8</td>
</tr>
<tr>
<td>Linseed</td>
<td>36.4</td>
<td>..</td>
<td>0.7</td>
<td>62.9</td>
</tr>
</tbody>
</table>

Sources: *Oilseeds in India, 1951-52 to 1955-56*

*Oilseeds in India, 1959-60*
expensive than other oils, producers try to limit its use to the statutory minimum of 5.0 per cent.¹

Fourthly, the major industries depending upon groundnut oil (and, in fact, all vegetable oils) are the following: (i) Vanaspati, (ii) Soap, (iii) Paint and Varnishes, (iv) Miscellaneous, e.g., Pharmaceutical, Lubricants, Cosmetics, etc.; groundnut oil is mainly used in the first two.

An attempt is made below to analyse the emerging pattern of the utilisation of groundnut oil in these industries.

THE VANASPATHI INDUSTRY

Vanaspati—a Sanskrit word—is a commercial name of hydrogenated vegetable oil² and it connotes the vegetable origin of the product as

¹ Infra, p. 400
² Hydrogenation is one of the greatest achievements of industrial chemistry. All oils and fats, whether of vegetable or animal origin, have a common basis of glycerine and fatty acids. The glycerine base is common to all, but different oils and fats do have a preponderance of one or the other kind of fatty acid radical. Among these fatty acids there are unsaturated acids, Oleic Acid is an example, which combine with glycerine to form a liquid glyceride while saturated acids like Stearic Acid form solid glycerides. Generally, all oils possess unsaturated fatty acids in greater proportion. An unsaturated oil can be converted at a proper temperature into a saturated solid fat by passing hydrogen through it in the presence of a suitable catalyst and at proper temperature. The process of hydrogenation of oils revolves round this principle of converting unsaturated acid portion of glyceride into a saturated one. Before hydrogenation refining of liquid oil is necessary. The removal of free fatty acids is known as "Neutralization" of oil, the removal of colouring matter as "Bleaching" of oil and the removal of smell as "Deodorization" of oil. The refining of oil requires all the three processes. The oil at present used for hydrogenation in India is groundnut oil and, to some extent, coconut oil, sesame oil, cottonseed oil and soyabean oil. In European hydrogenation industry, fish oils like whale oil are also used over and above vegetable oils. Dr. Korde, W.D., "Vanaspati", The Oils and Oilseeds Journal, Vol. III, No. 4.
compared with other fats of animal origin. Ghee (clarified butter), Vanaspati (hydrogenated vegetable oil) and vegetable oils are the main sources of supply of fat in Indian dietary; solid fats like ghee and vanaspati constitute about 40 per cent of the total consumption and the liquid oils 60 per cent.¹ Vanaspati or vegetable ghee is a vegetable oil which has been refined, hydrogenated, deodorized and vitaminized.

The growth of Vanaspati industry is analogous to that of margarine industry developed in Europe during the last quarter of the 19th century.² Hydrogenated fat was first introduced in India after World War I, when it was imported from Europe. As a cheap alternative to ghee its demand increased rapidly and in 1928–29 about 23,000 tons were imported. Indian entrepreneurs sensing the need for a cheaper product resembling Ghee in appearance, texture and consistency developed interest in the "artificial crystallization" of the processed vegetable oils. The first factory with an annual capacity of 1,800 tons was established at Lyallpur (now in West Pakistan) in 1930.³ In 1932, the Government of India gave protection to this industry, which made indigenous production remunerative. By 1939 there were eight factories producing 53,000 tons (TABLE VII.6). The imports of hydrogenated fats declined to a mere 305 tons per annum during 1934–39. Thus imports

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2 Cf. ante, Chap. III, Sec. III, pp. 59ff.
<table>
<thead>
<tr>
<th>Year</th>
<th>Imports of hydrogenated fats in tons</th>
<th>Production of Vanaspati '000 metric tons</th>
<th>Prices at Bombay</th>
<th>Prices of Vanaspati Groundnut Oil Rs. per ton</th>
<th>Prices of ghee Rs. per ton</th>
<th>Exports of Groundnuts '000 tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>14190</td>
<td>303</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>851</td>
</tr>
<tr>
<td>1931</td>
<td>5337</td>
<td>2432</td>
<td>721</td>
<td>369</td>
<td>1516</td>
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<td>1932</td>
<td>1585</td>
<td>3349</td>
<td>723</td>
<td>345</td>
<td>1264</td>
<td>546</td>
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<tr>
<td>1933</td>
<td>117</td>
<td>6298</td>
<td>526</td>
<td>220</td>
<td>1109</td>
<td>814</td>
</tr>
<tr>
<td>1934</td>
<td>190</td>
<td>15591</td>
<td>478</td>
<td>260</td>
<td>1259</td>
<td>703</td>
</tr>
<tr>
<td>1935</td>
<td>158</td>
<td>17363</td>
<td>520</td>
<td>335</td>
<td>1313</td>
<td>567</td>
</tr>
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<td>1936</td>
<td>125</td>
<td>19682</td>
<td>522</td>
<td>358</td>
<td>1193</td>
<td>953</td>
</tr>
<tr>
<td>1937</td>
<td>885</td>
<td>30207</td>
<td>546</td>
<td>296</td>
<td>1223</td>
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<td>37943</td>
<td>468</td>
<td>208</td>
<td>1230</td>
<td>1189</td>
</tr>
<tr>
<td>1939</td>
<td>303</td>
<td>52663</td>
<td>494</td>
<td>274</td>
<td>1257</td>
<td>780</td>
</tr>
<tr>
<td>1940</td>
<td>122</td>
<td>66709</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>469</td>
</tr>
<tr>
<td>1941</td>
<td>14</td>
<td>87685</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>400</td>
</tr>
<tr>
<td>1942</td>
<td>36</td>
<td>76978</td>
<td>852</td>
<td>618</td>
<td>2120</td>
<td>271</td>
</tr>
<tr>
<td>1943</td>
<td>2</td>
<td>92104</td>
<td>1400</td>
<td>866</td>
<td>3467</td>
<td>261</td>
</tr>
<tr>
<td>1944</td>
<td>1</td>
<td>114838</td>
<td>1280</td>
<td>795</td>
<td>3624</td>
<td>399</td>
</tr>
<tr>
<td>1945</td>
<td>2</td>
<td>134749</td>
<td>1307</td>
<td>854</td>
<td>3600</td>
<td>419</td>
</tr>
<tr>
<td>1946</td>
<td>15</td>
<td>145121</td>
<td>1633</td>
<td>1240</td>
<td>3556</td>
<td>9</td>
</tr>
<tr>
<td>1947</td>
<td>19</td>
<td>98715</td>
<td>1948</td>
<td>1485</td>
<td>4995</td>
<td>80</td>
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<tr>
<td>1948</td>
<td>Nil</td>
<td>129707</td>
<td>1960</td>
<td>1585</td>
<td>5843</td>
<td>42</td>
</tr>
<tr>
<td>1949</td>
<td>Exports of Vanaspati</td>
<td>157402</td>
<td>2099</td>
<td>1742</td>
<td>5614</td>
<td>126</td>
</tr>
<tr>
<td>1950</td>
<td></td>
<td>175196</td>
<td>2283</td>
<td>1866</td>
<td>-</td>
<td>38</td>
</tr>
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</table>
TABLE VII.6 (Cont'd)

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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
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<td>1951</td>
<td>2</td>
<td>174601</td>
<td>2465</td>
<td>1973</td>
<td>220</td>
<td>5.894</td>
<td>20</td>
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<tr>
<td>1952</td>
<td>3</td>
<td>193495</td>
<td>2016</td>
<td>1408</td>
<td>261</td>
<td>5.885</td>
<td>13</td>
</tr>
<tr>
<td>1953</td>
<td>1</td>
<td>194241</td>
<td>2293</td>
<td>1824</td>
<td>499</td>
<td>6.332</td>
<td>5</td>
</tr>
<tr>
<td>1954</td>
<td>6</td>
<td>239927</td>
<td>1707</td>
<td>1269</td>
<td>194</td>
<td>5.748</td>
<td>23</td>
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<tr>
<td>1955</td>
<td>16</td>
<td>264495</td>
<td>1515</td>
<td>1987</td>
<td>199</td>
<td>3.724</td>
<td>27</td>
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<td>1957</td>
<td>4</td>
<td>305757</td>
<td>2375</td>
<td>1515</td>
<td>199</td>
<td>4.796</td>
<td>2</td>
</tr>
<tr>
<td>1958</td>
<td>3</td>
<td>298481</td>
<td>2230</td>
<td>1504</td>
<td>159</td>
<td>5.090</td>
<td>20</td>
</tr>
<tr>
<td>1959</td>
<td>3</td>
<td>320583</td>
<td>2507</td>
<td>1773</td>
<td>159</td>
<td>5.073</td>
<td>24</td>
</tr>
<tr>
<td>1960</td>
<td>6</td>
<td>336661</td>
<td>2720</td>
<td>2133</td>
<td>159</td>
<td>5.167</td>
<td>48</td>
</tr>
<tr>
<td>1961</td>
<td>4</td>
<td>338544</td>
<td>3270</td>
<td>2133</td>
<td>159</td>
<td>5.142</td>
<td></td>
</tr>
<tr>
<td>1962</td>
<td>11</td>
<td>368400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources:

Column 2: *Annual Statement of the Seaborne Trade of British India.* Imports ceased after 1947. Since 1951, figures indicate exports (in thousand metric tons).

Column 3: The Vanaspati Manufacturers' Association of India, *Annual Reports.*

Column 4: The price data till 1949 are obtained from *Report on the Marketing of Groundnuts in India,* op. cit., p. 220. Figures for 1950-58 are as given in *The Fats and Oil Economy of India,* op. cit. Figures in cents per pound are converted to Rs. per long ton (21 cent = 1 rupee). Data for the financial year, e.g. 1930 indicates 1st April 1930 to 31st March 1931. Data for 1951-61 from *Statistical Abstract of India, 1962.*

Column 5: as 4 above. Data for the financial year.


Column 7: Export data till 1950 obtained from the *Report on the Marketing of Groundnuts in India,* since 1950 from *Oils and Oilsseed in India* (Annual) op. cit. Prices for the financial year.
were replaced by the home-produced Vanaspati (TABLE VII.6).

The development of the hydrogenated industry in India has been phenomenal. Having started with one factory in 1930, the industry now comprises of 58 factories with a total production capacity of nearly 550,000 tons.\(^1\) Its actual production in 1962 is estimated to be 370,000 tons (TABLE VII.6). The Vanaspati industry is the second largest food processing industry in India, sugar taking the first rank. It is the largest of its kind in Asia and the fifth largest in the world. The Vanaspati industry provides employment to about 10,000 persons directly and nearly Rs. 20 crores of capital are invested in it.\(^2\) It contributed Rs.10 crores to the exchequer as excise duty in 1960; the revenue contribution to the State Government and Local Authorities is estimated to be Rs.4.5 crores. It has given a spurt to a number of ancillary industries. As a largest food packing industry it has encouraged tin container fabrication industry throughout India. The manufacture of synthetic Vitamin A from lemongrass oil owes its existence to the demand arising from the need of fortifying Vanaspati by adding synthetic Vitamin A. Activated bleaching earths and carbon industries owe their existence to Vanaspati. It has also toned up the efficiency of oilseeds-crushing industry as only first grade vegetable oils are preferred by Vanaspati industry. The importance of this industry is reflected in the fact that it is included in the schedule of industries under "The Industries Development and Regulation Act 1951". Since 1945 the regulation and development of the Vanaspati industry has been exclusively in the hands

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2 Ibid., p. 6.
Together with many other industries, the development of Vanaspati industry was accelerated during World War II. Huge quantities of Vanaspati were purchased by the Government of India for feeding the armed forces stationed in the country. The large-scale slaughter of livestock undertaken for feeding the armed forces pushed up the prices of ghee to such high levels that the consumption of Vanaspati as a cheaper substitute became more and more popular (TABLE VII.6). To meet this growing demand the number of factories increased to 21 by 1945 and their production reached 135,000 tons, a rise of 155 per cent over the 1939 production.

Vanaspati production increased from 135,000 tons in 1945 to 175,000 tons in 1951. Its progress was interrupted during 1947 and 1948 mainly due to the loss of the market in West Pakistan and partly due to transport difficulties, high prices of raw-materials and price-control over Vanaspati.

When certain scientists certified that the use of Vanaspati was harmless, the Government of India encouraged its progress under the five year Plans. The following table indicates the relative progress of the Vanaspati industry during the first two Plans as compared with

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3 Cf. post, pp. 394-396

4 The Composition and Nutritive Value of Vanaspati, Council of Scientific and Industrial Research, 1952.
their respective targets and the target for the Third Plan.

The production of Vanaspati increased by 128,000 tons during the First Plan and 64,000 tons during the Second Plan. The easy and cheap availability of raw materials appears to have enabled the industry to fulfill the target of the First Plan. As compared with other prices, the prices of groundnut oil and sesame oil declined drastically during this period.

The rate of increase in Vanaspati production declined to 22.0 per cent during the Second Plan as compared with 78.0 per cent during the First Plan. Against the total production capacity of 5.5 lakh tons and the Third Plan target of 5 lakh tons, the production of Vanaspati in 1962 did not exceed 3.68 lakh tons. As the Second Plan target fell short of 40,000 tons (TABLE VII.7), it is feared that the industry may not be able to fulfill the target of the Third Plan. Possibly, the Plan targets are unrealistic and it is difficult to forecast the income and price-elasticity of demand of this highly substitutable product.

The slowing down of the progress of the industry, as indicated above, is mainly attributable to the inordinate rise in vegetable oil prices. The index of groundnut prices (base 1952-53 = 100) rose by 50 per cent from 71.4 in 1955 to 107.3 in 1956; the index shot up to 156.5 in 1961, indicating again a jump of 50 per cent over the 1956 level.

Vegetable oils, particularly groundnut oil and sesame oil, accounted for nearly 80 per cent of the total cost of production. Currently about 35 per cent of the total supplies of groundnut oil is utilised by Vanaspati industry. The slowing down of the progress of the Vanaspati industry and the sharp uptrend of vegetable oil prices since the end of the First Plan would seem to be the combined effect of several factors.

First, heavy deficit financing and consequential inflation drove
TABLE VII.7

PROGRESS OF VANASPATI INDUSTRY DURING
THE THREE PLANS

<table>
<thead>
<tr>
<th>Year</th>
<th>Vanaspati</th>
<th>Hardened Groundnut Oil*</th>
<th>Total</th>
<th>Target</th>
<th>Percentage Rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950-51</td>
<td>154,800</td>
<td>10,200</td>
<td>165,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1955-56</td>
<td>280,000</td>
<td>13,800</td>
<td>293,800</td>
<td>300,000</td>
<td>78% (actual)</td>
</tr>
<tr>
<td>1960-61</td>
<td>338,500</td>
<td>19,100</td>
<td>357,000</td>
<td>400,000</td>
<td>22% (actual)</td>
</tr>
<tr>
<td>1965-66</td>
<td>475,500</td>
<td>25,000</td>
<td>-</td>
<td>500,000</td>
<td>25% (targeted)</td>
</tr>
</tbody>
</table>

Note: *Hardened groundnut oil or soapstock is a non-edible byproduct of Vanaspati manufacturing produced during refining oil with a view to remove free fatty acids by using caustic soda. It goes in making soap. Production of soap-stock depends upon free fatty acid in the oil and roughly fetches about 65 per cent of the cost of oil in terms of fatty matter.


commodity prices up. The rise in the vegetable oil prices was part of this price uptrend.¹

Secondly, the prices of groundnut oil have never been controlled, whereas food prices were repressed through P.L. 480 imports and the prices of commercial crops like cotton, sugarcane, etc. were controlled in one way or another.²

Thirdly, the production of oilseeds in India seem to have failed to keep pace with the growing demand of vegetable oils. The production of five major oilseeds rose from 5.6 million tons in 1955-56 to 6.5 million tons in 1960-61; however, the output fell short of the Second Plan target of 7.6 million tons. The plan targets were modest based on raising the per capita consumption of oil from 0.4 oz. per day to 0.5 oz. per day as against the nutritional minimum of 2.0 oz. per day. The inordinate rise in vegetable oil prices, much higher than even the general price index, reflects the relative scarcity of vegetable oil supplies. This scarcity position is related to the misconceived emphasis on heavy industries in the Second Plan³ in preference to agriculture and to the comparatively meagre amount of resources made available to raise agricultural production in general⁴ and oilseeds production in particular.⁵

¹ Cf. ante, Chap. IV, Sec. III.
² Cf. ante, Chap. VIII, Sec. X.
³ Cf. ante, Chap. VI, TABLE VI.6.
⁴ Vide, Chap. VI, Sec. IIB.
⁵ Vide, Chap. VI, Sec. IV, pp. 343f.
Fourthly, the steep rise in fiscal levies during recent years seems to have played a part in slowing the annual rate of growth of Vanaspati consumption. In the beginning of 1959 the average incidence of excise duty on Vanaspati was Rs.128 per tonne; this increased to Rs.172 in 1959, to Rs.200 in 1961 and to Rs.384 in 1963. As a result, the consumption of Vanaspati declined to an annual average of 12,000 tons during the quinquennium ending 1963 from 19,500 tons during the First Plan.

Fifthly, the exports of vegetable oils depend upon export quotas determined by the government on the basis of domestic supplies and foreign exchange needs. The Government's policy to encourage the exports of scarce commodities like groundnut oil through export incentive schemes and the expectations regarding export quotas has imparted great instability to vegetable oils prices. It has been observed that exporters export groundnut oil even with incurring losses because they get in return import licence from the Government for some scarce commodity which fetches high black market prices in the domestic market.

As a result of the development of Vanaspati industry, the imports of hydrogenated fats ceased completely since 1947 (TABLE VII.6). Since 1950, the industry has been exporting Vanaspati but exports were irregular and small. Vanaspati has gained a market among Indian communities settled in neighbouring countries such as East Africa, Persian Gulf ports, Iran, Ceylon and Burma. The peak exports during the 'fifties were 16,000 tons valued at 2.2 crores in 1955; they averaged

1 Corresponding with the additional excise duty of Rs.184 per tonne on Vanaspati in 1963, there was an abolition of Rs.110 duty per tonne on raw oils. The V.M.A.I., Annual Report, 1963, p. 4.
7,500 tons during 1951-56 and 4,000 tons during 1957-60. During the Second Plan period the high prices of edible oils in India retarded the growth of exports. Until mid-1958 the Government of India's export policy aimed at maintaining adequate supplies of vegetable oils in domestic market and to curb rise in prices. Since then, the Government was forced to launch various export promotion schemes to raise depleted foreign exchange reserves. The export promotion scheme for Vanaspati was introduced in October 1959 though without any fruitful results (TABLE VII.6). In 1960 when the Government reduced the quantum of copra import entitlement to the exporters of Vanaspati, exports declined from 6,400 tons in 1960 to 4,200 tons in 1961. Moreover, India lost two important export markets for different reasons. Iran preferred to buy hydrogenated oils from the U.S.A. under P.L.480 and Burma's insistence to pay in non-convertible rupees abolished the gain arising from copra import entitlement to the potential Vanaspati exporters.

How are we trying to tackle the problem of short supply of vegetable oils? The Vanaspati industry imported 3,021 tons of soyabean oil in 1961. It has further agreed to use 50,000 tons of soyabean oil (imported under P.L. 480 provisions) in Vanaspati manufacture in 1963. Imported raw materials should be most welcome if they satisfy the doctrine of comparative cost. Is this true of P.L.480 imports? The fact that the U.S.A. practices "sophisticated dumping" can be visualised with

1 Cf. ante, Chap. IV, Sec. III, p. 151.
2 Oilseeds in India (Annual) 1959-60, op. cit., p. xi.
3 The Vanaspati Manufacturers' Association of India, Annual Report, 1962.
the aid of calculations of Professor Schultz: According to him, the value of P.L.480 products to the countries receiving them has perhaps been about 37 cents for each dollar of C.C.C. costs. P.L.480 exports have been about 27 per cent of all U.S. exports of farm products (July 1954 to Dec. 1959); and this proportion may well be higher today.

Professor Schultz adds:

"If these underdeveloped countries had had a choice of receiving from the United States either dollars or farm products of equivalent value at world prices, they would with few exceptions have preferred to have the dollars because the dollars would have been worth more to them in achieving economic growth......"

It has been claimed that hydrogenation (the Vanaspati industry) increases the food resources of the country by converting low grade or inedible oils into high grade edible products, raises the keeping quality of the otherwise unstorable material and had enabled a rational distribution of the food resources of the country while simultaneously functioning as a cheap substitute for pure ghee. It has been counter-argued that the Vanaspati industry does not add to the food resources of the country, but merely converts liquid vegetable oils into fat of

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1 Estimates of Professor Schultz:

<table>
<thead>
<tr>
<th></th>
<th>Million $</th>
<th>Per Cent of C.C.C. Cost: $5700 million= 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. If C.C.C. cost of P.L.480 were 5,700</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>ii. Value at world market price equals 2,850</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>iii. Value to receiving countries 2,110</td>
<td>37</td>
<td></td>
</tr>
</tbody>
</table>


2 Ibid, p. 1022.

3 Ibid.
ghee-like consistency and, in doing so, it necessarily increases the cost-burden over consumers.

All the advantages claimed by hydrogenation can be met by refining oil. Vegetable oils are good enough for nutrition and can meet all types of culinary requirements of the people by adopting suitable method of refining oil depending upon whether natural flavour is required or neutralized oil is preferred. The refining process can upgrade the crude low grade oils into high grade edible products. It can also enhance the keeping quality of oil, thereby raising the possibility of storing for longer periods. In fact, the Vanaspati industry is an outcome of the shortage of milk-fat—ghee—and its popularity as a substitute largely depends upon the relative price difference between ghee and Vanaspati. The experience of advanced countries indicates that people have shown pronounced preference for butter as compared with margarine depending upon the easy and cheap availability of butter. The present production of dairy products including ghee is much short of demand, the yield of milk per milch cattle being one of the lowest in the world. The moment India would be able to step up dairy production and with rising national income, the relative preference for Vanaspati may decline in India. Prejudice against Vanaspati already exists and at times seems quite extensive.

It needs to be emphasized here that the Vanaspati industry is essentially a processing industry which attempts to meet the demand for edible fat relying largely on vegetable oils as principal ingredient. These oils are even otherwise consumed in the country in their natural state. Such an attempt invariably adds to the cost to consumers. This consideration has motivated the government to prescribe the margins above costs which the manufacturers may charge and the margins which the
retailers charge. The manufacturers margin is Rs.900 per tonne. This includes excise duty of Rs.384 per tonne (incidentally, this comes to one-fifth of the retail price of Vanaspati), freight to destination of Rs.46 per tonne, packing charges of Rs.170 per tonne, profit margin of Rs.70 per tonne and processing cost of Rs.230 per tonne. The retail trade margin has been prescribed at Rs.140 per tonne.

Though the consumer has to pay a high price for Vanaspati as compared with natural oil, the Vanaspati industry has played a useful role in providing a cheap substitute for ghee and in extending the use of groundnut oil. Vanaspati has points of comparison with margarine in western countries. The latter resembles butter and serves as a cheap spread fat. Vanaspati resembles ghee in consistency and granular appearance and is a cheap substitute to ghee. The striking increase in the sale of Vanaspati since 1939 is proof of its qualities as a substitute.

Vanaspati has also been criticized on the grounds that it tends to increase the adulteration of ghee; it is not as nutritive as ghee and is harmful to health because it does contain small traces of newly added harmful substances on account of the treatment it has been subjected to. It is to meet these criticisms that the Union Government promulgated the Vegetable Oil Products Control Order early in 1945, which provided for government control over the manufacture, stocks, sale, distribution and prices of Vanaspati. This order was superseded in 1947 by another order. Besides specifications in regard to appearance, taste, moisture, melting point, free fatty acids, unsaponifiable matter, etc. which were included in the previous order; it also provided for compulsory use of sesame oil—the inclusion of this oil permits easy detection of the adulteration of ghee—and incorporation of vitamins A and D. The specifications in the order being rigorously prescribed cannot be easily
evaded by manufacturers. ¹

The emergence of groundnut as a premier oilseed in India was encouraged by the growth of Vanaspati industry. When oilseeds cultivation in India depended largely on foreign markets, the preference of the foreign buyers for seeds discouraged the growth of modern oil-milling industry in India. The Vanaspati industry by its growing need for vegetable oils has given a great impetus to modern oil-milling industry in the country. The localization of different varieties of oilseeds production in India has conditioned the taste of the people to locally produced edible oils. Formerly, groundnut oil was least preferred edible oil in the areas other than those that produced groundnut, namely the south. Particularly after 1939, the Vanaspati industry has made it possible for groundnut oil to assure ready acceptance throughout the country by cutting across regional preferences for oils; in the form of Vanaspati, it has become acceptable all over India. It has thereby contributed to a rational distribution of the fat resources of the country.

The future of Vanaspati industry is linked up with the development of dairy industry in India. However, the industry can play a significant role in another sphere which has not yet been tapped. The industry has so far concentrated its attention on the manufacture of edible fats resembling ghee. The industry may now profitably direct its attention to the hydrogenation of non-edible oils or fish oils with a view to cater to the needs of diverse industries, such as the manufacture of soaps, fatty acids, tallow substitutes, candles, etc., which are

¹ G.S. Hattiangdi, The Vanaspati Industry, 1958, Appendix C; The Vegetable Oil Products Control Order, 1947.
currently mainly relying on expensive vegetable oils. The development of the nascent fishing industry may open up vast reservoirs of cheap fish oils which may need hydrogenation before they can be used in several industries indicated above.

SOAP INDUSTRY

Soap industry next to Vanaspati industry, is the largest claimant among manufacturing industries which make use of vegetable oils. Nearly 3 per cent of the total production of groundnut oil is used in soap manufacture, though its share has been declining because of its high cost.

Soap was introduced in India from the West in the mid-19th century. The first soap factory was started in India in 1879. Between 1913-14 and 1938-39 the production of soap increased five-fold, from 14,000 tons to 70,000 tons and imports declined from Rs.2.00 crores to Rs. 27 lakhs.

The Second World War gave a further impetus to this industry. The soap industry in India consists of two sectors, generally known as the organised sector and the cottage sector. The production of both

1 The houses of Patanwala and Godrej established their soap factories in Bombay in 1910 and 1920, respectively. The Tatas established a big soap factory in Cochin in the late twenties. Ora Prakash, Report on Progress of Research in Oil Technology in India, Indian Central Oilseeds Committee, 1950, pp. 20-23. The production of soap witnessed substantial progress with the Swadeshi movement in the thirties; soap factories were established by Swastik in 1931, Liver Brothers in 1934 and Tatas in 1938, all in Bombay. Dr. J.G. Kane, "The Oil, Soap and Allied Industries of Greater Bombay", The Oils and Oilseeds Journal, Vol. XVII, No. 11, May 1960, pp. 13-16.

2 Ora Prakash, op. cit., p. 21.
these sectors amounted to 120,000 tons in 1950, the former having an output of 80,000 tons and the latter 40,000 tons.

During the First Plan, the output of the organised sector increased by 50 per cent from 80,000 tons in 1950 to 112,000 tons in 1956, and, during the Second Plan, again by 30 per cent, to 145,000 tons in 1961. Currently there are 90 big factories in the organised sector with an installed capacity of 255,000 tons. By contrast, there are about 7,000 small-scale units in the cottage sector producing about 230,000 tons of soap. The Third Plan target for the soap industry is five lakh tons. Out of the additional production of 130,000 tons contemplated in the Plan, 80,000 tons are allocated to the organised sector and 50,000 tons to the cottage sectors. During the 'fifties India began exporting soap but they constitute merely 0.5 per cent of the production of the organised sector. In 1960-61, exports (mostly toilet soaps) amounted to 760 tons, valued at Rs. 17 lakhs.

The All-India Khadi and Village Industries Commission has attempted to organise the village soap industry. The quality of soap produced in small-scale units is generally low. The cottage soap industry is one of the most capital-intensive chemical industries. It has to obtain a substantial proportion of the raw materials from distant markets, some of them foreign (coconut oil, caustic soda, etc.). Because of the lack of technical equipment and know-how, they do not produce
They also suffer from the same disadvantages which are operative in the case of village oil industry. As such, their cost of production is higher than that of the factory soap.

The per capita consumption of soap in India is one of the lowest in the world. The average per capita consumption of 2.2 lbs. of soap per annum conceals the fact that the average consumption for urban population is 6 lbs. per capita, the consumption of rural population being about 1.25 lbs. As prosperity increases, soap is needed more. The income elasticity of demand for soap is 1.75. It appears, therefore, that there is a wide scope for enlarging soap consumption in rural areas. The cottage sector might be able to partake in the enlarged market of this product to some extent.

Vegetable oil is one of the important materials in soap manufacturing.

Glycerine is a byproduct of the soap industry. The organised sector produced 6,000 tons of glycerine worth Rs.3.5 crores in 1960-61. It has a strong demand not only in India but abroad. For example, Japan exported crude glycerine totalling 2,000 tons in 1958 to France, Britain, W. Germany, Poland, Norway, Czechoslovakia, and the Netherlands. Apart from its use in the manufacture of explosives, it is an important raw material in the industries manufacturing resin, paint, toothpaste, cosmetics, chemicals, textiles, pharmaceuticals, etc. There is an imperative need to explore the possibility of developing the export markets of this commodity. It seems unfortunate that many of the small-scale soap manufactures in India do not recover glycerine. In this respect, India should follow the example of the U.S.A. where some manufacturers are fat-splitters, whose sole business is to separate glycerine and fatty acids from oil and, then, they are marketed separately; the latter being used in soap-making.

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2 Supra, pp. 372-374.

3 Commerce, Annual Number, 1959, pp. 142-144.

4 Ibid.
The industry at present uses about 1 lakh tons of vegetable oils per annum. Prices of soap are known to fluctuate in close relation with the prices of oil. The chief oils used in the industry are classified by Dr. G.S. Hattiangdi into three categories: Hard oils, Soft oils and Nut oils; the first category is valued for its detergent qualities and the other two for lathering qualities.

Slaughter fats are not used in soap manufacture in India for fear of offending the religious feeling of the bulk of the population, which may result into consumer resistance. Hence the requirements of hard oils are met with hydrogenating the vegetable oils to the required degree of hardness. The vegetable oils which are hardened in India for soap manufacture are groundnut oil, linseed oil, safflower oil, sesame oil and niger seed oil and, in addition, mowrah oil, which is a solid fat in its natural state. The chief soft oils used for soap making in India are groundnut oil, safflower oil and rosin as well as hardened oil and acid oil which are byproducts of Vanaspati oil.

Coconut oil, which is mostly imported, is generally the only "nut" oil used in soap manufacture in India. Palm oil — another "nut" oil — is used if allowed to be imported. Generally a mixture of different oils is compounded in the manufacture of good soap. It is estimated that to fulfil the Third Plan target of 500,000 tons of soap production, nearly 230,000 tons of oils and fats will be required.

The prevailing shortage of edible oils and fats in the Indian market has tempted many to recommend that the soap industry should gradually reduce the use of more popular edible oils giving place to

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1 Commerce Annual Number, 1959, pp. 142-144.
2 Dr. J.S. Aggarwal (ed.), op. cit., p. 141.
less known minor and/or non-edible oils. Crude groundnut oil, coconut oil and to a small extent sesame oil are the chief edible oils used by soap manufacturers of India. A substantial portion of solvent extracted cottonseed oil is used in soap manufacture. Linseed oil, mowrah oil, castorseed oil, rosin, soap-stock and acid oil are the chief non-edible raw materials used currently. Although a certain amount of coconut oil is unavoidable, the use of groundnut and other edible oils can be avoided if attempts are made in the right direction. A new and promising avenue would be the increasing use of neem oil. It is estimated that there are about 40 million neem trees in the country, of which the present surveyed one alone can be used to produce 35,000 tons of oil.1 The Khadi & Village Industries Commission is at present examining the possibility of commercial exploitation of these vast sources. But as the cottage sector basically suffers from several disadvantages any attempt by this sector in this direction may not be successful, though the cost of producing non-edible oil from minor oilseeds might turn out to be low ultimately. Several handicaps are encountered in the use of substitute oils suggested in soap manufacture.

Scientists have suggested several non-edible oils as substitutes for edible oils used in soap manufacturing. Most of these are soft oils. India is experiencing a scarcity of "nut" oils; nearly 50 per cent of the requirements of the coconut oil is imported. It is the dearest oil of all. Hence, attempts should be made to find "nut" oil substitutes. It pleads for the popularisation of the cultivation of oil-palm in India.

The commercial utilisation of oil-bearing materials suggested as substitutes — seeds and nuts of agriculture and/or forest origin — has not materialised due to technical and economic reasons: First, factual data about the chemical structure of such oil-bearing materials are lacking; consequently oil-millers are reluctant to undertake the crushing of such materials. Secondly, the lack of sustained supply of a standard quality oil has prevented their use in soap manufacture. Thirdly, the inferior quality of oil produced from unstandardised seeds requires additional cost of refining.

During the last two decades, there has been a new development all over the world in the 'detergent' market. Synthetic detergents made mostly from the petroleum base have been taking the place of soap. In some countries, non-soapy detergents are in almost sole control of the cloth-washing market. In the U.S.A., for example, non-soapy detergents now comprise more than 70 per cent of the entire detergent market.  

One of the factors accounting for growing export surpluses of oils in the U.S.A. is the phenomenal spread of synthetic detergents, specially in the 'fourties and 'fifties of the present century. The replacement of soap by synthetic detergents in other countries of the world is likely to occur due to the price advantage in favour of synthetic detergents. This development is bound to release large surpluses of oils and fats either for internal consumption or for export in these countries.

It is impossible to say how fast the non-soapy detergent market will grow in India. India already possesses two non-soapy detergents

1 Commerce, Annual Number, 1959, pp. 142-144.
manufacturing plants. As price advantage is substantially in favour of detergents the growing demand for cleaning agents is likely to be met by such plants. The textile and laundry industry might prefer this product in place of soap. To the extent that the soap production is replaced by the non-soapy detergents, it will release some quantities of vegetable oils for other purposes.

V. THE UTILISATION OF OILCAKES

Three grades of groundnut cakes are recognised by trade in India; (1) the Ghani-cake, (2) the expeller cake and (3) the solvent-extracted meal. As ghani-cake contains more oil and moisture, its keeping quality is low. It used to find an outlet in the domestic market whereas the expeller-variety used to be exported. Recently, a third variety produced by the solvent extraction process has come into prominence; the bulk of their supplies are exported. The solvent-extraction process is gaining ground because of its advantages in reducing the loss of oil which attended the crushing and expeller processes. Reduction in oil and moisture content resulting from this process increases the keeping quality of the cake considerably. Hence its export demand as a compound cattlefeed grows rapidly.

The market value of cake is of prime importance as it constitutes an important byproduct of the oil-seeds crushing industry. Whereas the European seed-crushing industry was developed with an eye on exports, it developed in India to meet the local needs. The linkage between

1 Supra, TABLE VII.4.
2 Vide Chap. IV, Sec. III, pp. 153f.
3 Vide Chap. III, Sec. I, p. 41.
oilseed-crushing industry and livestock industry in Europe provided a profitable market for oilcakes whereas India's home market for this product was undeveloped until recently. India depended largely on European markets — Great Britain, Germany, Netherlands, Denmark, Belgium — for the disposal of this byproduct. Its price generally fluctuated according to the fluctuations in export demand, except during the brief interval of 1944-54 when its export was banned.

Western Europe used to claim more than 90 per cent of the world imports of groundnut and other oilseeds till the beginning of the Second World War. The use of groundnut cakes in the livestock industry of the countries of Western Europe and Britain also caused the growth in international trade of this commodity. The massive European imports of oilcakes, in addition to the availability of huge supplies in the domestic market obtained from crushing imported oilseeds, owed their origin to the following factors.

First, most of the European countries were deficient in oils and fats supply. Europeans (barring southern countries) were habituated to consume spread fats like butter and margarine, the production of which required adequate feeding for livestock.

Secondly, it was not possible for European countries to undertake the production of oilseeds or palms because of climatic reasons. Wherever the temperate zone climate proved suitable for vegetative growth, the production of food crops was undertaken. At least the densely populated Europe demanded it. Consequently, the European countries were experiencing scarcity of feed-stuffs for cattle. Thus the export demand for cakes partly depended upon the prices of milk, butter, margarine, meat, etc.; and partly upon the available supplies of cattlefeeds in the European markets.
This linkage of the oilseeds-crushing industry with the livestock industry laid a strong foundation for the European crushing industry. Because of a highly elastic demand for a particular vegetable oil, the assured market for cakes acted as a shock absorber against fluctuations in the prices of oil. This linkage enabled the European importers to import unprocessed oilseeds as they could quote more attractive prices for oilseeds than the prices prevailing in the producing countries. If Europe could do this successfully, with the natural advantage of the ready availability of oilseeds, our technicians should be able to do it too. Europe may be then willing to take from us both the oil and the cake and give us in exchange other goods which we may not be able to produce with the same comparative efficiency. Of such other goods there will be plenty as the spread of more efficient productive activity added to the Indian standard of living.

During the first 14 years of the present century, groundnut cakes were not the major item of exports, both in quantum and value. Nearly 71 per cent of the groundnut crop was exported unprocessed. During the First World War oilcakes exports could not move due to the shortage of shipping space and high freight rates.

With the gradual growth of the local market for edible oils and its export demand in nearby markets during the inter-War period, the proportion of kernels retained and crushed within the country increased. As the domestic market was not in a position to absorb large releases of oilcakes, oilcakes moved towards Europe where there was a growing market for this commodity. The ratio of the exports of oilcakes to the total production increased from 17 per cent per annum during 1914/19 to 24 per cent per annum during 1919/29 and to 50 per cent per annum during 1929/39.
With the steep rise in the foreign demand specially since 1934-35, the prices of oilcakes almost doubled in 1937-38. During the Second World War, the exports of oilcakes were reduced by 50 per cent, falling from 208,000 tons during the depression decade to 102,000 tons. Oilcake exports to European countries (except Great Britain) ceased completely after 1941-42, which caused its price to fall. During the latter half of the War the growing food deficits and the War-time inflation helped the recovery of oilcake prices; the prices rose from a low of Rs.1.06 per maund in 1940-41 to Rs.3.75 per maund in 1943-44.

In 1944 when the Government of India imposed a ban on exports, its prices again registered a downtrend till 1947-48. With stationary production of groundnuts and groundnut cakes during the post-War period, prices of oilcakes increased from Rs.2.19 per maund in 1947-48 to Rs.8.31 per maund in 1952-53. To some extent this price rise reflected the Korean War boom and the continual post-War inflation in the country. Even when the inflationary trend was interrupted during the last two years of the First Plan due to heavy fall in agricultural prices, oilcake prices were not affected significantly (TABLE IV.2). When the inflationary uptrend was resumed with the beginning of the Second Plan, oilcake prices rose steeply, reaching a peak of Rs.12.56 per maund in 1960. This rise in prices particularly during 1947-55 despite a ban on exports till 1955 indicates the growth of the domestic market for this commodity.

In February 1955, oilcakes were released for exports subject to quota restrictions and export duties after a ban of over a decade. In order to improve the precarious foreign exchange situation, the export duties on oilcakes were abolished in 1958. Since 1955, oilcake exports (including groundnut cakes) have increased sharply and have
broken the pre-War record in 1959 and subsequently in 1961. However, India now no longer possesses that semi-monopolistic position as a supplier of oilcakes in world markets which she was occupying before the War. Since the mid-'fifties, U.S.A. has been dominating the world export markets in oilcakes and, during the early 'sixties, her share has varied between 40-50 per cent of the world exports. Hence India's export prospects and prices she would obtain for oilcakes is largely governed by price position of U.S.A.'s export surpluses and the proportion she sells under special foreign aid programmes. The demand for oilcakes and meal in Europe is very elastic. The increase in the supplies from India would exert only a slightly downward pressure on prices in world markets; however, the rise in the exports of cakes of large magnitude is likely to raise the domestic prices of this commodity. It appears that the levy of export duties was an unwise step and prevented the regaining of the export markets lost during the decade when its export was banned. An assured foreign demand and the resulting high prices would have facilitated the growth of the economically viable seed crushing industry in India and farmers as producers would have also been benefitted. 1

Till 1939 India contributed a substantial share in the world trade of oilseeds by exporting its oilseeds produce. Since the War, oilseeds are crushed in the country, thus making available large stuffs of oilcakes. In TABLE VII.8 the estimated production and the exports of oilcakes and meal are indicated. India is one of the largest producers of oilcakes in the world. 2 Presently, she produces about 4 million

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1 Cf. ante, Chap. IV, Sec. III, pp. 39-41.
2 Oileak production in U.S.A. amounted to 13.5 million tons and exports 1.1 million tons. Soyabean meal alone formed 49 per cent of the world exports of oilcakes in 1963. F.A.O., Production and Trade Yearbooks, Annual.
### TABLE VII.8


*(Figures in thousand tons)*

<table>
<thead>
<tr>
<th>Period/year</th>
<th>Production</th>
<th>Exports</th>
<th>Exports of Groundnut cake Expeller + Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1935-39</td>
<td>1,667</td>
<td>348</td>
<td>265</td>
</tr>
<tr>
<td>1945-49</td>
<td>2,244</td>
<td>2.2</td>
<td>Neg.</td>
</tr>
<tr>
<td>1950-54</td>
<td>2,299</td>
<td>7.0</td>
<td>Neg.</td>
</tr>
<tr>
<td><strong>Annual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1955-56</td>
<td>2,388</td>
<td>163</td>
<td>96 + - = 96</td>
</tr>
<tr>
<td>1956-57</td>
<td>2,604</td>
<td>52</td>
<td>12 + 4 = 16</td>
</tr>
<tr>
<td>1957-58</td>
<td>2,447</td>
<td>107</td>
<td>33 + 44 = 77</td>
</tr>
<tr>
<td>1958-59</td>
<td>2,766</td>
<td>312</td>
<td>106 +175 = 281</td>
</tr>
<tr>
<td>1959-60</td>
<td>2,620</td>
<td>539</td>
<td>155 +291 = 446</td>
</tr>
<tr>
<td>1960-61</td>
<td>2,992</td>
<td>427</td>
<td>34 + 311 = 345</td>
</tr>
<tr>
<td>1961-62</td>
<td>3,012</td>
<td>506</td>
<td>74 + 399 = 473</td>
</tr>
</tbody>
</table>

**Sources:**

(1) *The Fats and Oil Economy of India*, op. cit.

(2) *Annual Statement of Sea-borne Trade of India*.

(3) *Indian Trade Journal*.
tons of oilcakes; 3.0 million tons from major oilseeds and nearly 1.0 million tons from other sources, e.g. cottonseed, copra, kardi, rice-bran, non-edible oilseeds, etc. Groundnut cakes constitute roughly about 50 per cent of the total oilcake production in India. Groundnut cake exports constituted 70-80 per cent of the total exports of oilcakes during the inter-War period and, during the triennium ending 1961, 80 per cent. Presently, oilcake exports amount to nearly 17 per cent of the total production and groundnut cake exports 25 per cent of its total production. As indicated earlier the exports of oilcakes have expanded since mid-1958 well above the pre-War peak due to the liberal export quotas and abolition of export duties. The recent growth in the export of groundnut meal is due to the rapid expansion of solvent extraction plants during the Second Plan. Now the expeller-produced cake is not favoured in continental markets.

Though the recent rise in the exports of oilcakes has broken the pre-War records, the ratio of exports to the total production is small. The bulk of the produce is retained in India and it is used mainly as cattlefeed\(^1\) or manure.\(^2\) In several countries oilcakes are put to other and more sophisticated uses too than as cattlefeed and manure. Groundnut is rich in protein content. Some of its protein products which are manufactured in other parts of the world are indicated below. Much scope

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1. Groundnut cake is considered as richest nitrogenous fertiliser among oilcakes. It can be profitably applied as manure for paddy, potato, sugarcane, vegetables, bananas and other fruit trees. *Study of Groundnut in India*, op. cit., p. 33.

2. Groundnut cake is cheapest of the oilcakes used as cattlefeed and contains good amount of protein. One ton of groundnut cake contains 1,080 lb. of protein as compared to 407 lb. in cottonseed and 785 lb. in sesame cake. *Ibid.*, p. 34.
exists for the commercial production of these products. Some products have already been produced on a laboratory scale in various research laboratories of India. but much needs to be done to harness these resources for better utilisation.

An important use of groundnut proteins is to help the manufacture of synthetic fibre. According to experts, it can be produced more cheaply than wool, and can be blended with rayon, cotton, wool, etc. There is a need to explore the possibilities of producing synthetic fibre from some of India's protein-rich oilcakes (groundnut, cottonseed, etc.).

The Central Food and Technological Research Institute, Mysore, has done much pioneering work, in the preparation of protein-rich edible flour from groundnut cakes and its utilisation for human consumption. A mixture containing 5 parts of groundnut flour and 95 parts of wheat flour contain 16 to 19 per cent more proteins than wheat flour alone. Groundnut flour has been used in the preparation of multi-purpose food (as a cheap protein-food). It also blends easily with wheat and other

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1 See following articles:

Dr. K.V. Giri, "Groundnut Oil as a Raw Material for Food Industries", The Oils and Oilsseeds Journal, September, 1951.


H.V. Parekh, "Production of White De-fatted Groundnut Flour", The Oils and Oilsseeds Journal, September, 1952.

2 Anon., Food and Population and Development of Food Industries in India, Central Food and Technological Research Institute, Mysore, 1952, pp. 292-315.
flours and consequently is made use of by bakers, confectioners, candy makers and ice cream manufacturers.

Groundnut flour constitutes an important raw material in the manufacture of pre-digested protein-foods. Since the beginning of the present century, several countries (particularly China, Japan, U.K. and U.S.A.) undertook the manufacture of protein hydrolystates. Its other uses are in making protein adhesives and glues, laundry starches, sizes for paper and textiles and in the manufacture of plastics.

In the manufacture of various protein products from groundnut flour, the quality of groundnut flour is of prime importance. The expeller or ghani-produced oilcakes are not suitable in the manufacture of various human foods from groundnut flour as excessive heat caused by friction injures proteins and affects the quality of the flour. The intended end use of the product as a manure leads to a very cursory preparation of raw-material leaving stones, dirt, husk and other substances in the cake. The manufacture of pure groundnut flour necessitates a major departure from conventional crushing methods. The adoption of solvent-extraction machinery is more suitable to the manufacture of groundnut flour than the other conventional methods.

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1 The Tata Oil Mills Company has recently negotiated an agreement with the National Research Development Corporation of India for the exploitation of a process evolved by the Central Food & Technological Institute, Mysore, for the extraction of vegetable proteins from oilseeds. Vide, *The Oils and Oilcakes Journal*, Vol. XIV, No. 3, Sept., 1961.

2 Two plants were supplied by the United National Children's Emergency Fund for the manufacture of groundnut flour. Under an agreement with the Government of India, the Tata Oil Mills Company undertook to operate one of the plants whereas the other was installed at Coimbatore. Ibid.
During the 'fifties, India produced an annual average of 3.8 million tons of groundnut. After making due allowance for seed, direct consumption and local milling, it is possible to obtain, in addition to groundnut oil, 1.3 million ton of groundnut flour. Thus, in the midst of plenty, India is poor in protein food. The cost of flour produced on a laboratory scale was estimated at 50 NP per k.g. which suggests the commercial feasibility of this industry. This development may help to mitigate the protein-deficiency and undernourishment, which are common in India and some other countries similarly placed.

VI. POSSIBILITIES OF RAISING THE PRODUCTION OF OILS AND FATS

The prospects of a rise in the consumption of oils and fats in India seem obvious.

The minimum per capita requirements of oils and fats per annum, according to experts, is 45 lbs. or 2 ozs. per day. Against this, the per capita availability of the principal edible oils for human consumption in India during 1959-60 was about 0.3 oz. per day in addition to 0.1 oz. of ghee and butter.1 The bulk of the demand for oil in India is for edible purposes. The rise of population during the initial phase of development brings extra pressures on the demand for oil for edible purposes, particularly if it is accompanied by rising per capita income. For example, during 1850 to 1950, while the population of Europe doubled, the consumption of vegetable oils quadrupled owing partly to population growth but mainly

1 Oilseeds in India, 1959-60, 1961, p. xii.
due to swift rise in living standards. \(^1\)

According to the Third World Food Survey, \(^2\) nations with high per capita national incomes derive larger percentage of calories from fats, and nations with lower national per capita incomes derive larger percentage of calories from carbohydrates. This suggests that the consumption of fat is highly correlated with levels of income for consumers within the lower income groups. As the economy of the country develops, more fats are added to the diet and more technical uses are discovered for oilseeds. The oil-using industries are still nascent in India. The per capita consumption of hard fats (Vanaspati and ghee), soaps and paints is, quite naturally, among the lowest in the world. \(^3\) With industrial development and improvement in living standards, the demand for oils and fats as raw materials in these industries may rise substantially.

In Europe and the U.S.A., which are high fat consumption regions, the income elasticity of demand for oils and fats is low; hence the demand for oils and fats is stabilized though there might be shifts within the oils and fats group. In India, where fat consumption is low, we find a sensitive consumer-response to income.

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3. The per capita annual consumption of hard fat (ghee, butter and Vanaspati) at the end of the Second Plan was 5.13 lbs. The estimated per capita annual consumption of liquid oil in raw form for edible purposes was 6.7 lb., that of soap 2.2 lb., that of oil for toilet purposes 1.10 lb. The projections of demand for lubrication and miscellaneous purposes were not based on population data and was assumed to be 65,000 tons. Data used for demand projections by the Indian Central Oilseeds Committee, Annual Report, 1962.
According to the *Fats & Oil Economy of India*, the income elasticity of vegetable oils (including Vanaspati) is about 1.0, i.e., consumption varies proportionately with income. According to *Hindustan Lever*, the expenditure elasticities of Vanaspati, ghee, liquid oil, oil for toilet purposes and manufacture of soap were 1.44, 1.96, 0.50, 1.0 and 1.75, respectively.

India's production of fats and oils has not been sufficient to meet the rapidly increasing demands for internal consumption. Several possibilities of raising the production of oils and fats are reviewed here.

**SOLVENT EXTRACTION**

Increased domestic supplies of vegetable oils may result with the adoption of better techniques of extraction of oil from seed. Our policy in this respect has been to encourage the village oil industry even though it may involve some oil loss to the country. There are curbs on the establishment of new oilseeds crushing mills and also on the expansion of existing mills. Various issues related to such policies have been examined before.

Faced with such policies the private trade interests found a way out to reclaim the oil left in the cake from the inefficient

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3. Cf. ante, TABLE VII.3.
4. Supra, pp. 374-386.
crushing methods. The solvent-extraction method developed in India as a subsidiary method for the solvent extraction of ghani and expeller produced oilcakes. Unlike these crushing methods, the solvent-extraction process leaves negligible proportion of oil in the residue.

The Government of India lifted the ban on the exports of oilcakes and meal in 1955 and liberalized export quotas subsequently.\(^1\) Faced with the adverse foreign exchange situation, all restrictions on the exports of meal were removed in 1958. As deoiled cakes were preferred in European markets, freeing of cakes from export restrictions provided a great fillip to the solvent-extraction industry.

The industry started from scratch in the beginning of the Second Plan. In 1956, there were six solvent-extraction plants; their number increased to 72 in 1962. Although a few of them extract oil from rice bran and mowrah cake, most confine themselves to obtain residue oil from groundnut expeller cakes. These plants are permitted to extract oil from oilcakes alone. Oil is a byproduct of these plants; their main product is groundnut meal, the bulk of which is exported. The solvent-extracted oil is discounted in the market at present because it is obtained from solvent extraction of oilcakes involving second pressing, the first pressing being done in expeller mills from seeds. In spite of the technical superiority of this process in extracting oil over other methods, these plants are not permitted to extract oil from oilseeds. Because of this limitation,\(^1\)

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\(^1\) Cf. ante, Chap. IV, Sec. III, pp. 153-155.
the industry developed only at big crushing centres located in Western India where fresh oilcakes for feeding the solvent-extraction plants are available. These plants cannot be established in other areas simply because the government would not permit them to extract oil from oilseeds. Moreover, the industry is not in a position to extract oil from the entire production of oilcakes in the country. In India where oilseed crushing industry is highly decentralized, the collection of fresh oilcakes from various parts to feed large-scale plants becomes an uneconomic proposition. The solvent-extraction plants are economical only if the units are of a certain minimum scale. This technique adds to the supply of oil, brings better value for the oilcakes exported — as solvent-extracted cakes are preferred abroad as against expeller cakes — increases the national income and, therefore, aggregate employment.

MINOR OILSEEDS AND NON-EDIBLE OILSEEDS

India produces a great variety of minor oilseeds of forest and non-forest origin. The total estimated production of minor oilseeds for the year 1954-55 was 3.11 lakh tons. Though some of

<table>
<thead>
<tr>
<th>Minor oilseeds</th>
<th>Production (thousand tons)</th>
<th>Oil-content (percentage)</th>
</tr>
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<tbody>
<tr>
<td>karanj</td>
<td>86</td>
<td>28</td>
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<tr>
<td>neem</td>
<td>79</td>
<td>33</td>
</tr>
<tr>
<td>niger</td>
<td>65</td>
<td>35</td>
</tr>
<tr>
<td>mowrah</td>
<td>57</td>
<td>33-43</td>
</tr>
<tr>
<td>safflower or kardi</td>
<td>4</td>
<td>25-30</td>
</tr>
<tr>
<td>tobacco-seed</td>
<td>8</td>
<td>36-41</td>
</tr>
<tr>
<td>poppy</td>
<td>3</td>
<td>-</td>
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<td>sun and ambadi</td>
<td>10</td>
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these seeds are classified as minor oilseeds, their aggregate production is considerable. Given the sustained supplies, their commercial utilization may not be difficult as their oil-content is comparable to, in some cases even higher than, the oil-content of some oilseeds currently utilized commercially. Most of the minor oilseeds available in the country are at present not commercially utilized. Some minor oilseeds like safflower, nigerseed, mowrah, neem, tobacco-seed are partially used for crushing purposes while others, like karanj, kamalaseed, pita-kusum, cashewnut, are crushed in negligible proportions.

The exploitation of minor oilseeds may add greatly to the oil-resources of the country. Non-edible oils from such seeds may be utilized for industrial purposes, the cakes being used as manure. The exports of non-edible oils for which there is a great demand in foreign countries may help to lift up our exports.

Little attention has been paid to the survey, assessment, organization, utilization and marketing of non-edible minor oilseeds of forest and non-forest origin. The processing and the utilization of their oils in industry depends upon several factors like sustained yields, regular supplies, economic collection, etc. As the economy progresses, the economic potentialities of these untapped resources become viable as a result, on the one hand, of the increased accumulation of capital and the spread of skills and know-how; and, on the other, the growth in demand, both for edible and non-edible purposes, which will manifest with the rise in per-capita incomes.

There appears to be ample room for extension services by
the state in this field. The popular measures for the purpose will be plantations, conservation of existing stocks and organizing collection on some cooperative or cottage-industry basis or through community projects. Steps in this direction are in evidence. By 1961 the Khadi and Village Industries Commission had established 127 seed collection centres.

RICE BRAN OIL

The Report of an ad hoc Committee on Rice-bran Oil Industry (1961) constituted by the Government of India examined the possibility of extracting oil from rice-bran. Rice-bran is estimated to yield about 15 per cent of edible oil. Since last 20 years rice-bran oil has been used as an edible oil in several countries. It is similar

1 The Indian Council of Agricultural Research, the Indian Central Oilseeds Committee and the Forest Research Institute has been taking an active interest in the development of non-edible oilseeds and their oil industry. In 1954 various State governments conducted economic surveys of all oil-bearing plants and seeds in the country. Their results were published in the Indian Oilseeds Journal published by the Indian Central Oilseeds Committee.


3 When rice is milled, it yields about 64 per cent of whole and broken kernels, 12 per cent bran, 4 per cent polish and 20 per cent hulls. As per calculations given by V.K. Raghunathrao, a ton of rice-bran would yield 0.1 ton of rice oil, 5 lbs. of wax, 10 lbs. of fatty acids and 0.8 ton of extracted bran. "Possibilities of Oil Resources from Rice Mills in India", The Oils and Oilseeds Journal, Vol. VIII, No. 3, 1955.

4 The U.S.A., a comparatively small producer of rice produces annually 15,000 tons and Japan 17,000 tons of rice-bran oil. The Oils & Oilseeds Journal, Vol. XIV, No. 11, 1962, p. 4.
In taste and composition to groundnut oil and can be hydrogenated. Rice-wax, fatty acids, soaps and extracted bran are obtained as byproducts. The extracted bran can be used as cattle feed and other products find industrial uses.

It is estimated that nearly 2,500 rice mills in India polish rice. The estimated production of milled rice in India is 28 million tons and the output of bran is 3 million tons annually. It can give nearly 300,000 tons of oil valued at Rs.40 crores. This is but a technical possibility today. Currently, as in the ages past, rice bran in India is being given to cattle to obtain more milk. Though rice mills have taken the place of hand-pounding of rice, these mills are operated on a small-scale and widely scattered. These factors militate against full-scale expansion of the rice-bran oil industry. As in the case of minor oilseeds, with the progress of the economy, what may appear uneconomic today may move within the margins of economic viability. When marginal capital invested in other trades adds so considerably to G.N.P., it must take time before its use spreads to these potentialities, waiting in queue.

SKIMMING OF MILK

The form in which milk is consumed is one of the contributory factors in fat supply. The scarcity of this product and consequent high prices have encouraged some to find a substitute to whole milk.

1 There are about 800 rice-mills in Andhra, 113 in Bombay, 148 in Bihar, 82 in Uttar Pradesh, 56 in Orissa, 9 in Madhya Pradesh, 323 in Jammu-Kashmir, 144 in Rajasthan and 600 in Madras. The Oils & Oilseeds Journal, Vol. XII, No. 11, May 1960.
in several countries. During the War, Germany used to skim the entire milk supply and produced 60,000 tons of butter fat every year, whole milk being reserved only for children. Even the leading dairy countries like Holland and New Zealand use skimmed milk but milk is not skimmed to the full extent and is standardized at 2.0 to 2.5 per cent of butter fat. Natural buffalo milk usually contains 4-6 per cent fat, sometimes even more. In India some private and public dairies in big industrial centres like Bombay, Ahmadabad, etc. do sell skimmed milk which has become popular among low income groups because of its cheapness. Skimmed milk being non-fatty is also preferred by those interested in reducing body weight. While skimming of milk is no answer to the overall scarcity of oils and fats, which can be mitigated only by raising per acre or per milch-cattle output, it may be a short term device in times of acute scarcities.

UTILIZATION OF COTTONSEEDS

India occupies the second position, next to U.S.A., in the production of cottonseeds. Its current production amounts to 1.9 million tons. The quantity of cottonseeds crushed in 1961-62, however, was only 321,000 tons, yielding 45,000 tons of cottonseed oil. 1

Nearly 85 per cent of the U.S.A.'s production is crushed as against

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1 Against an installed capacity of 180,000 tons (seed-basis) in 1960-61, the Third Plan envisages an increase in installed capacity to 850,000 tons in 1965-66 which could produce 127,500 tons cottonseed oil. The production target was fixed at 100,000 tons by 1965-66. Third Five Year Plan, Annexture III, p. 508.
situation, the Vanaspati industry decided in 1958 to use cottonseed oil voluntarily. However, the cottonseed oil as an ingredient bulked only 7.8 per cent (24,000 tons) of the total production of Vanaspati in 1961. This low percentage, as we shall see below, may be due to the low quality, and high prices, of cottonseed oil available in India.

The cottonseed crushing industry in India has to face certain impediments. First, there is a deep-rooted belief among Indian farmers that the feeding of whole cottonseeds to cattle increases the fat content and the quantum of milk. However, modern research has indicated that decorticated cottonseed cake is more nutritive than either whole cottonseed or undecorticated cottonseed cake. As the oil-content of cottonseeds is very low, the profitable basis of cottonseed crushing rests on the possibilities of marketing all the byproducts of this industry. If whole cottonseeds are crushed, the yield of undecorticated cakes amounts to 80 per cent of the total weight of cottonseeds. However, the crushing of cottonseeds after decorticating and delinting yields decorticated cakes equivalent to only 38 per cent of the total weight of cottonseeds. The modernization of cottonseed crushing mills will be induced only when the prices of decorticated cake is more attractive than the undecorticated cake (even after making due allowance for getting additional returns from

1 The Vanaspati Manufacturers' Association of India, Annual Report, 1962.
nearly 15 per cent in India.\textsuperscript{1} Out of about 70 mills reporting crushing cottonseeds, only 20 were operating in 1963. Most of them do not work throughout the year.\textsuperscript{2} Cottonseed oil is non-edible oil in India. Refined or hydrogenated cottonseed oil is a standard edible oil in the U.S.A. It is estimated that if 75 per cent of the available cottonseeds are crushed, it may bring about 200,000 tons of cottonseed oil on 13 per cent oil-content basis. It is, therefore, necessary to examine the causes why cottonseed crushing has not made much headway in India.

It is suggested that the Vanaspati industry should rely in a larger measure on the use of cottonseed oil as groundnut and sesame oils, the chief ingredients in Vanaspati, are costly. It is claimed that this switch-over may serve three purposes: First, it may give an impetus to the crushing of cottonseeds. Secondly, it may restrain the prices of edible oils without affecting the prices of cattle feeds (Cottonseed is an important cattle feed), cottonseed cakes being available for cattle feeding. Thirdly, it will increase the supply of groundnut oil for direct edible use to the extent it is substituted by cottonseed oil. In view of the difficult oil supply

\textsuperscript{1} The production of cottonseeds in the U.S.A. amounted to 6.1 million tons in 1963-64, yielding 2.0 billion pounds of cottonseed oil, 3.5 million pounds of edible cottonseed flour and 2.7 million tons of cake and meal. Nearly 57\% of cottonseed oil is used for salad or cooking oil, 30\% as baking or frying fats, 11\% in margarine and the remaining 2\% for miscellaneous uses. \textit{The Oil & Oilseeds Journal}, Sept. 1963, pp. 4-6 and Jan. 1964, pp. 4-6.

linters and good quality oil).

Secondly, most of the cottonseed crushing establishments in India are small-scale and do not possess modern delinting and decorticating machinery required for maintaining the quality of the several products of cottonseeds crushing. Linters—a byproduct of cottonseed crushing—is not extracted from cottonseeds because most establishments do not possess delinting machinery. The practice of crushing whole cottonseeds is widely prevalent. The economic advantages of producing linters—an important source of raw materials to India's newly developed rayon and cellulose industries—are not availed of due to another reason. According to experts' opinion, only American variety of cottonseeds yield first class linters. However, the American and Desi variety of cottonseeds are not marketed separately and are available badly mixed presumably because they are ultimately to be utilized as cattlefeeds.

Thirdly, with outdated equipment cottonseed crushing in India yields only 12-13 per cent oil as compared to 17-21 per cent in the

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1 Since the liberalization of the exports of oilcakes and meal particularly since 1958, the prices of these commodities have shot up. For example, the prices of groundnut oilcake (which constitute more than 50 per cent of the total supplies of oilcakes in the country) at Bombay jumped up from Rs.198 per ton in 1957 to Rs.500 per ton in 1964.

2 It is suggested that India need not import rayon pulp or glycerine as it can manufacture such products. It needs to be emphasized here that import substitution, if natural, is apt to be in consonance with the central economic objective of maximizing production. The aim of the policy should be the latter, not import substitution. If the industry is economically viable, it should be pursued regardless of any issue of import substitution.
U.S.A. Most of the mills crush seeds without grading or cleaning them.

Fourthly, the practice of crushing whole cottonseeds without decorticating hulls yields low grade oil, unsuitable for use either in Vanaspati manufacture or even in soap making. As a result the cost of hydrogenating cottonseed oil becomes higher than that of hydrogenating groundnut oil. Cottonseed oil can compete with groundnut oil only when it is sold at a discount as compared with the latter.

Fifthly, there is a popular prejudice against the use of cottonseed oil for human consumption. As India has been traditionally a producer of first grade edible oils, people have developed a liking for such oils as sesame, coconut, rape and mustard, etc.

Finally, the highly volatile nature of cottonseeds' (in fact of all oilseeds) prices has hampered the continuous working of cottonseed crushing industry. For example, a rise of Rs.10 per ton in the price of cottonseed requires an increase of Rs.80 in the prices of cottonseed oil per ton to maintain crushing parities. The price of cottonseeds is predominantly governed by the production of cotton on the supply side and the demand for cattlefeeds.